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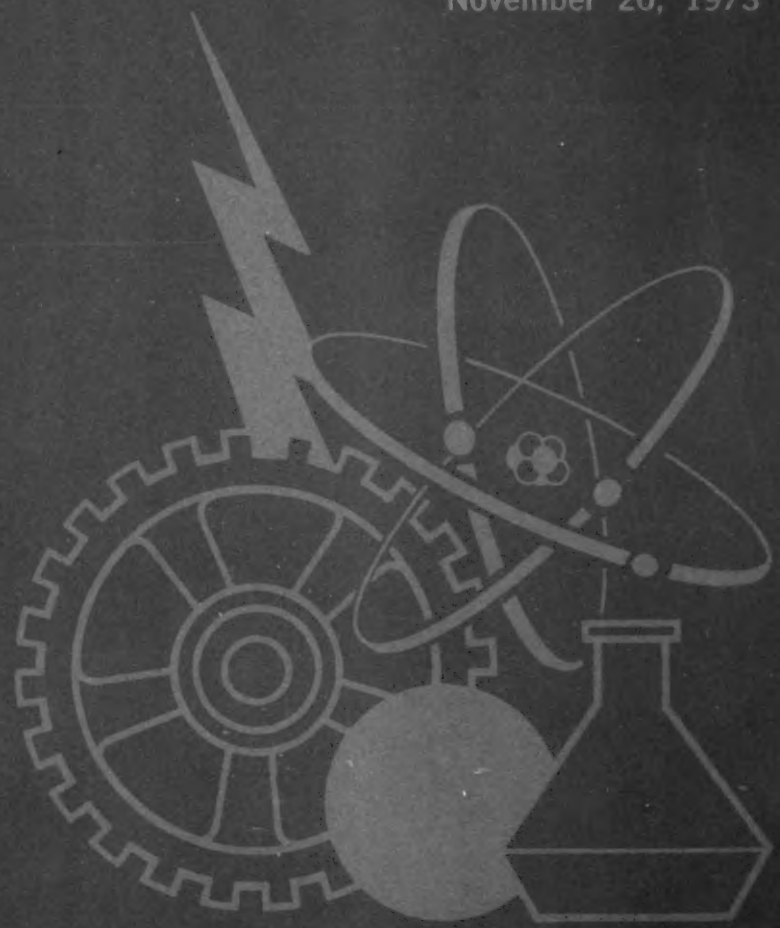

U. S. DEPARTMENT OF COMMERCE
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November 20, 1973 Volume 916 Number 3

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PATENT OFFICE NOTICES

Examination

Pursuant to the provisions of Rule 341(c), an examination for persons seeking registration before the United States Patent Office as patent attorneys or agents will be held on Tuesday, March 5, 1974.

With the exception of those former patent examiners for whom the examination is waived, all persons recognized for practice before the Patent Office in patent cases must, pursuant to the noted rule, pass the examination. Those passing the examination do not thereby qualify for recognition for practice before the Patent Office in trademark cases. Recognition for practice in trademark cases is governed by Rule 2.12 of the Trademark Rules of Practice, which does not require the passing of an examination.

The examination will be given under the supervision of the Civil Service Commission, and may be taken in any of the cities in which the Civil Service Commission regularly conducts examinations. Applications to take the examination must be filed in the Patent Office together with a $35 fee not later than January 31, 1974.

An applicant who passed the morning section of the examination given September 11, 1973, but who failed the afternoon section of the examination, will not be required in the future to retake the morning section, provided, the applicant takes and passes the afternoon section of one of the next two succeeding examinations.

Likewise, an applicant who passed the afternoon section of the examination given September 11, 1973, but who failed the morning section of the examination, will not be required in the future to retake the afternoon section, provided, the applicant takes and passes the morning section of one of the next two succeeding examinations.

Application blanks may be obtained from the Clerk of the United States Patent Office Committee on Enrollment, Bldg. 3, 11th Floor, Room C16, Crystal Plaza, Arlington, Va., or by mail addressed to the Commissioner of Patents, Washington, D.C., 20231, and directed to the attention of the Clerk of the Committee on Enrollment.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,787,495, O. Przystawik, FOUNTAIN INSTALLATION AND AN ELECTRIC CIRCUIT FOR OPERATING SAME; **2,794,674,** same, FOUNTAIN INSTALLATION DISASSEMBLING FEATURES; **2,794,675,** same, FOUNTAIN INSTALLATION; **2,922,582,** same; **2,970,771,** same, NOZZLE ARRANGEMENT FOR FOUNTAIN DISPLAYS, **filed** Nov. 1, 1972, D.C., M.D. Fla. (Tampa), Doc. 72–25–C. Ft. M., *Dancing Waters, Inc.* v. *Dancing Waters, Incorporated.*

2,794,674. (See 2,787,495.)

2,794,695. (See 2,787,495.)

2,800,744, A. C. Boultinghouse, TOY AIRCRAFT ENGINE STARTER; **2,855,070,** McRoskey and McRoskey, STARTING DEVICE FOR TOY ENGINES; **2,875,554,** A. C. Boultinghouse, TOY ENGINE STARTER; **3,250,265,** J. M. Barr, MODEL ENGINE STARTER, **filed** Feb. 7, 1972, D.C., N.D. Ill. (Chicago), Doc. 72c324, *The Testor Corporation* v. *L. M. Cox Manufacturing Company, Inc.* Stipulation for dismissal with prejudice and order, Mar. 15, 1973.

2,811,069, A. H. Faulkner, ELECTRICAL MUSICAL INSTRUMENT, **filed** Mar. 29, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c793, *Alfred H. Faulkner* v. *Hammond Corporation and Hammond Organ Company.*

2,818,235, J. G. Baran, RELEASABLE LATCH SUPPORT FOR PANEL CEILING; **3,698,475,** E. G. Beck, Jr., FLAT SHEET OF METAL HAVING AN ELONGATED MEMBER SECURED THERETO, **filed** June 13, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1523, *Airtex Corporation* v. *Shelley Radiant Ceiling Company.*

2,827,665, Rogers, Jr., Bender and Ten Broeck, MANUFACTURE OF FLEXIBLE CELLULAR MATERIAL, **filed** July 11, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1580–CC, *Goodyear Tire & Rubber Co.* v. *E. R. Carpenter Co.*

2,847,941, W. M. Jackson, AXIAL FLOW PUMPS; **3,590,766,** same, STEERING UNIT FOR BARGES AND THE LIKE, **filed** Mar. 2, 1973, D.C., M.D. Ala. (Montgomery), Doc. 3958–N, *Hydro-Vac, Inc. and Purple Pumps, Inc.* v. *The Waterways Company and William M. Jackson.*

2,855,070. (See 2,800,744.)

2,867,326, G. Hirs, FILTER APPARATUS, **filed** July 9, 1973, D.C., M.D. Fla. (Tampa), Doc. 73–334–C T.K., *Hydromation Filter Company* v. *Reynolds Metals Co. et al.*

2,875,282, E. M. Reiback, BINAURAL PHONOGRAPH PICKUP, **filed** Feb. 26, 1973, D.C., N.D. Ohio (Cleveland), Doc. C–73–213, *Empire Scientific Corp.* v. *Audio-Technica U.S., Inc.*

2,875,554. (See 2,800,744.)

2,922,582. (See 2,787,495.)

2,970,771. (See 2,787,495.)

3,152,704, A. E. Russell, VEHICLE TOWING DEVICE, **filed** Oct. 20, 1972, D.C., S.D. Ind. (Indianapolis), Doc. IP72–C–518, *Lift-Tow, Inc.* v. *Cleanamation, Inc. and Tow-Away, Inc.*

3,153,436, R. G. Chesley, SPIRAL MEAT SLICER, **filed** May 4, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1005 AAH, *Harry J. Hoenselaar* v. *C. Vincent Zazzara and Mission Honey Hams, Inc.*

3,250,265. (See 2,800,744.)

3,590,514, D. P. Begley, FISHING LURE AND METHOD FOR MAKING, **filed** June 16, 1972, D.C., E.D. Calif. (Fresno), Doc. F–678–C, *Daniel P. Begley* v. *Wayne Brawley and B & P Enterprises.*

3,590,766. (See 2,847,941.)

3,635,271, D. R. Markham, CUTTERHEAD AND SHEAR BAR FOR FORAGE HARVESTERS, **filed** Sept. 11, 1972, D.C., S.D. Iowa (Des Moines), Doc. 72–212–1, *Deere & Company* v. *Rex Chainbelt, Inc.*

3,698,475. (See 2,818,235.)

D. 171,963, L. Blum, RAIL, **filed** June 25, 1969, D.C., N.D. Ga. (Atlanta), Doc. 12847, *Blumcraft of Pittsburgh (a partnership consisting of Hyman Blum, Max Blum, Louis Blum and Harry P. Blum)* v. *Kawneer Co., Inc. et al.* Decision, granting defendants' motion for summary judgment, Sept. 22, 1972.

D. 222,305, P. Feuer, PENCIL; **D. 222,306,** same; **D. 222,401,** same, **filed** Feb. 22, 1973, D.C., S.D.N.Y., Doc. 73–C–810, *Creative Creations Inc.* v. *Fun World Inc.*

D. 222,306. (See D. 222,305.)

D. 222,401. (See D. 222,305.)

D. 222,886, L. F. Miner, VASE FOR FLOWERS OR THE LIKE, **filed** July 12, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73–1588–LTL, *Loyal F. Miner* v. *Robert T. Ehninger and Lonnie Keeforer.*

D. 224,990, R. Brooks, FOLDED UMBRELLA, **filed** Dec. 1, 1972, D.C. Md. (Baltimore), Doc. 72–1225–B, *'totes'* v. *Polan, Katz & Co., Inc.*

D. 225,046, J. Nance, DESK, **filed** Apr. 20, 1973, D.C., S.D.N.Y., Doc. 73–1768, *J. G. Furniture Company, Inc.* v. *Litton Business Systems, Inc.*

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

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DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents; 18th and C Streets NW.; Washington, D.C. 20240

Patent application 357,742. Method of Detecting Mine Rock Fractures by Gas Injection. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 357,743. Method of Evaluating Mine Rock Fractures by Gas Injection and Flow Logging. Filed June 25, 1973. PC $3/MF $1.45.

Patent application 382,248. System for Packing Particulate Material Into Long Cylindrical Containers. Filed July 24, 1973. PC $3/MF $1.45.

Patent application 369,681. Rigid Testing Machine. Filed June 25, 1973. PC $3/MF $1.45.

Patent 3,728,671. Multiple-Electrode Directional, Acoustic Source. Filed Apr. 30, 1970. Patented Apr. 17, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION

Assistant General Counsel for Patents, Washington, D.C. 20545

Patent application 222,785. Electrical Wave Pumped Pulsed Laser. Filed Feb. 2, 1972. PC $3/MF $1.45.

Patent application 303,552. Non-Destructive Analysis of Fuel Pins. Filed Nov. 3, 1972. PC $3/MF $1.45.

Patent 3,577,344. Fibrous Thermal Insulation and Method of Making Same. Filed Jan. 29, 1969. Patented May 4, 1971. Not available NTIS.

Patent 3,724,373. Retarded Glide Bomb. Filed Dec. 15, 1970. Patented Apr. 3, 1973. Not available NTIS.

Patent 3,736,430. Position Indicating System and Method Therefor. Filed Oct. 23, 1969. Patented May 29, 1973. Not available NTIS.

Patent 3,737,689. Power Conditioner. Filed Aug. 20, 1965. Patented June 5, 1973. Not available NTIS.

Patent 3,739,261. Method for Measuring the Amount of Cold Working in a Stainless Steel Sample. Filed June 28, 1971. Patented June 12, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE AIR FORCE

AF/JACP; Washington, D.C. 20314

Patent 2,851,876. Ultrasonic Apparatus for the Non-Destructive Evaluation of Structural Bonds. Filed Mar. 11, 1955. Patented Sept. 16, 1958. Not available NTIS.

Patent 2,912,958. Acoustic Siren for Generating Wide Band Noise. Filed July 11, 1958. Patented Nov. 17, 1959. Not available NTIS.

Patent 2,954,793. Pressure Compensated Inhalation-Exhalation Valve for Pressure Breathing Mask. Filed Sept. 12, 1958. Patented Oct. 4, 1960. Not available NTIS.

Patent 2,957,350. Pressure Transducer. Filed July 11, 1955. Patented Oct. 25, 1960. Not available NTIS.

Patent 2,961,918. High Speed Camera. Filed Oct. 22, 1958. Patented Nov. 29, 1960. Not available NTIS.

Patent 2,984,809. Tube Socket for Printed Circuits. Filed July 22, 1957. Patented May 16, 1961. Not available NTIS.

Patent 2,985,473. Floating Seal. Filed Nov. 19, 1957. Patented May 23, 1961. Not available NTIS.

Patent 2,995,792. Quick Release Mechanism. Filed Feb. 6, 1959. Patented Aug. 15, 1961. Not available NTIS.

Patent 3,000,468. Mechanical Timing Unit. Filed June 20, 1956. Patented Sept. 19, 1961. Not available NTIS.

Patent 3,005,966. Printed Circuit Delay Line. Filed June 17, 1960. Patented Oct. 24, 1961. Not available NTIS.

Patent 3,012,470. High Speed Stereoscopic Camera. Filed Dec. 4, 1959. Patented Dec. 12, 1961. Not available NTIS.

Patent 3,016,735. Structural Bond Evaluation. Filed June 17, 1958. Patented Jan. 16, 1962. Not available NTIS.

Patent 3,029,685. High Speed Camera. Filed Oct. 21, 1959. Patented Apr. 17, 1962. Not available NTIS.

Patent 3,040,627. Rotating Mirror. Filed Mar. 3, 1961. Patented June 26, 1962. Not available NTIS.

Patent 3,066,342. Smear Test Sampler for Radioactive and Bacteriological Surveys. Filed Dec. 4, 1962. Patented Dec. 4, 1969. Not available NTIS.

Patent 3,072,094. Acoustic Siren for Generating Wide Band Noise With Improved Efficiency. Filed Feb. 12, 1960. Patented Jan. 8, 1963. Not available NTIS.

Patent 3,078,708. Tensile Cryostat. Filed Aug. 21, 1961. Patented Feb. 26, 1963. Not available NTIS.

Patent 3,119,172. Method of Making an Electrical Connection. Filed May 15, 1959. Patented Jan. 28, 1964. Not available NTIS.

Patent 3,187,556. Automatic Recording Vicat Type Apparatus for Heat Distortion and Melting Point Determination. Filed Aug. 7, 1962. Patented June 8, 1965. Not available NTIS.

Patent 3,297,414. Method for Making High Purity Fine Particle Oxides. Filed June 30, 1964. Patented Jan. 10, 1967. Not available NTIS.

Patent 3,540,945. Permanent Magnets. Filed June 11, 1968. Patented Nov. 17, 1970. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY

Chief, Patents Division; Office of the Judge Advocate General: Patent Division Rm 2C-455; Pentagon, Washington, D.C. 20310

Patent 3,398,316. Infrared Imaging Device With Photoconductive Target. Filed Aug. 4, 1955. Patented Aug. 20, 1968. Not available NTIS.

Patent 3,537,004. Automatic Meter Range Changer. Filed Jan. 21,1969. Patented Oct. 27, 1970. Not available NTIS.

Patent 3,539,308. Composite Aluminum Armor Plate. Filed June 15, 1967. Patented Nov. 10, 1970. Not available NTIS.

Patent 3,539,833. Logic Circuit for Use With Adaption Kits and Like Missile Devices. Filed Oct. 26, 1967. Patented Nov. 10, 1970. Not available NTIS.

Patent 3,557,698. Photoflash Bomb. Filed Jan. 28, 1953. Patented Jan. 26, 1971. Not available NTIS.

Patent 3,567,859. Capacitively Coupled Graphic Input System. Filed Feb. 16, 1968. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,568,188. Continuous Wave Radar With Means for Indicating Moving Target Direction. Filed Mar. 7, 1967. Patented Mar. 2, 1971. Not available NTIS.

Patent 3,568,703. Supersonic Jet Engine Inlet Flueric Bypass Control. Filed Apr. 7, 1969. Patented Mar. 9, 1971. Not available NTIS.

Patent 3,572,088. Device for Conversion of Ultrasonic Images Into Visible Displays. Filed Feb. 20, 1968. Patented Mar. 23, 1971. Not available NTIS.

Patent 3,572,095. Apparatus for Measuring Detonation Velocities in Explosives. Filed Apr. 9, 1969. Patented Mar. 23, 1971. Not available NTIS.

Patent 3,572,246. Detonating Fuze System. Filed Oct. 23, 1968. Patented Mar. 23, 1971. Not available NTIS.

Patent 3,572,482. Automatic Clutch and Brake for Hoists. Filed Jan. 3, 1969. Patented Mar. 30, 1971. Not available NTIS.

Patent 3,573,180. Method of Initiating Polymerization Electrolytically. Filed Nov. 3, 1967, Patented Mar. 30, 1971. Not available NTIS.

Patent 3,577,086. Generator of Delayed Sequences Employing Shift Register Techniques. Filed Sept. 30, 1968. Patented May 4, 1971. Not available NTIS.

Patent 3,577,105. Method and Apparatus for Joining Plated Dielectric-Form Waveguide Components. Filed May 29, 1969. Patented May 4, 1971. Not available NTIS.

Patent 3,578,185. Mechanized Vehicle System. Filed Sept. 9, 1969. Patented May 11, 1971. Not available NTIS.

Patent 3,578,468. Solution for Depositing an Electroless Cobalt Alloy. Filed Mar. 1, 1968. Patented May 11, 1971. Not available NTIS.

Patent 3,578,842. Exploding Mirror for Optical Viewing System. Filed Oct. 8, 1968. Patented May 18, 1971. Not available NTIS.

Patent 3,580,069. Subsonic Fluidic Angle-of-Attack Sensor. Filed June 9, 1969. Patented May 25, 1971. Not available NTIS.

Patent 3,583,593. Variable Level Coagulant Reservoir for Self-Sealing Fuel Tanks. Filed Sept. 23, 1969. Patented June 8, 1971. Not available NTIS.

Patent 3,593,767. Barrier Container. Filed Feb. 4, 1969. Patented July 20, 1971. Not available NTIS.

Patent 3,597,829. Method of Making a Nickel Hydroxide Electrode. Filed Mar. 18, 1969. Patented Aug. 10, 1971. Not available NTIS.

Patent 3,601,934. Wind Apron for Air Supported Shelters. Filed July 29, 1969. Patented Aug. 31, 1971. Not available NTIS.

Patent 3,602,041. Engine Wear Life Measurement. Filed May 28, 1969. Patented Aug. 31, 1971. Not available NTIS.

Patent 3,602,845. Slot Line Nonreciprocal Phase Shifter. Filed Jan. 27, 1970. Patented Aug. 31, 1971. Not available NTIS.

Patent 3,607,054. Method for Extending the Growth of Vapor-Liquid-Solid Grown Crystals. Filed May 5, 1969. Patented Sept. 21, 1971. Not available NTIS.

Patent 3,608,434. Dual Area Hydraulic Actuator. Filed Jan. 13, 1970. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,609,598. Periodically Loaded Ferrite Phase Shifter. Filed Mar. 19, 1970. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,610,095. Rocket Means for Driving a Free Punch. Filed June 29, 1967. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,231. Q-Switched Frequency Doubling Laser. Filed Nov. 17, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,396. Dual Waveguide Horn Antenna. Filed June 18, 1970. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,613,191. Missile Cover and Method of Making the Cover. Filed Dec. 1, 1969. Patented Oct. 19, 1971. Not available NTIS.

Patent 3,614,125. Utilized High-Mobility Suspension and Drive System for Track Vehicles. Filed Mar. 31, 1970. Patented Oct. 19, 1971. Not available NTIS.

Patent 3,615,407. Method of Treating a Sintered Photoconductor. Filed Nov. 21, 1968. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,616,246. Use of Absorptive Materials for the Production of Fungus Spores. Filed Aug. 14, 1964. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,616,300. Composites Including Electroconductive Reinforcing Material Formed by Electrodeposition and Method of Forming the Composites. Filed Aug. 13, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,616,382. Process for Making Ozone. Filed Nov. 4, 1969. Patented Oct. 26, 1971. Not available NTIS.

Patent 3,617,586. Burning Rate Accelerating Method. Filed Dec. 30, 1963. Patented Nov. 2, 1971. Not available NTIS.

Patent 3,617,710. Multiplex Digital Laser Generator. Filed Nov. 17, 1969. Patented Nov. 2, 1972. Not available NTIS.

Patent 3,617,909. Electrostatic Lens and Feed-Through. Filed Dec. 23, 1969. Patented Nov. 2, 1971. Not available NTIS.

Patent 3,617,922. Crystal Oscillator With Phase Control Loop Including a Crystal Discriminator. Filed May 28, 1970. Patented Nov. 2, 1971. Not available NTIS.

Patent 3,620,278. Hybrid Pneumatic-Mechanical Variable Configuration Wheel. Filed Dec. 16, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,621,460. Sputtered Vapor Laser. Filed July 6, 1970. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,622,828. Flat Display Tube With Addressable Cathode. Filed Dec. 1, 1969. Patented Nov. 23, 1971. Not available NTIS.

Patent 3,624,522. Glass Laser Coupling Reflector. Filed Aug. 5, 1969. Patented Nov. 30, 1971. Not available NTIS.

Patent 3,628,250. Mechanical Spherical Triangle Computer. Filed Oct. 16, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,628,268. Pure Fluid Display. Filed May 28, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,628,861. Multibeam Optical Wave Transmission. Filed Aug. 4, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,623,915. Chemical Agent Detector Holder and Method of Testing Air and Liquids for Chemical Agent Contamination. Filed July 3, 1969. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,601. High-Resolution Optical Upconverter. Filed May 15, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,630,901. Grease Compositions. Filed Sept. 24, 1969. Patented Dec. 28, 1971. Not available NTIS.

Patent 3,633,941. Replaceable Shock-Mounted Kingpin Installation. Filed Mar. 13, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,634,101. Fresh Peach Flavor Additive Composition and Method of Enhancing the Flavor of Freeze-Dehydrated Peaches. Filed May 27, 1969. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,637,658. Processing RDX and HMX. Filed Nov. 26, 1968. Patented Jan. 25, 1972. Not available NTIS.

Patent 3,642,449. Detector Composition and Method. Filed July 2, 1969. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,642,981. Toxic Chemical Vaccines. Filed May 4, 1970. Patented Feb. 15, 1972. Not available NTIS.

Patent 3,645,160. Quick Release Pin. Filed Oct. 7, 1969. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,759. Method of Packing Flexible Packages in a Cylindrical Container. Filed June 25, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,335. Recorder Correlator Using Scanning Recorder Devices. Filed Feb. 11, 1969. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,358. Optical Upconverter. Filed May 15, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,650,909. Method of Forming a Polymer Coating. Filed May 27, 1970. Patented Mar. 21, 1972. Not available NTIS.

Patent 3,657,076. Method of Bonding Quartz to Metal. Filed Dec. 17, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,637,363. Process for the Deuteration of the Hydroxyl of Organic Alcohols. Filed Sept. 15, 1967. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,657,534. Digital Scale for Tomography and Method of Using Same. Filed Mar. 12, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,661,676. Production of Single Crystal Aluminum Oxide. Filed May 4, 1970. Patented May 9, 1972. Not available NTIS.

Patent 3,663,243. Composition Utilized in Image Development System. Filed May 20, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,337. Method and Apparatus for Making Spiral Reefed Parachutes. Filed Sept. 2, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,663,896. Ferrofluid Ultrasonic Signal Modulator. Filed Aug. 17, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,664,811. Preparation of Aluminum Hydride by Hydrogenation of Aluminum in Presence of a Dialkyl Aluminum Hydride. Filed Dec. 23, 1968. Patented May 23, 1972. Not available NTIS.

Patent 3,664,958. Grease Compositions. Filed Sept. 26, 1969. Patented May 23, 1972. Not available NTIS.

Patent 3,665,749. Shock Machine. Filed July 27, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,263. Pneumatic Level Sensing Device. Filed Aug. 17, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,103. Apparatus for Inserting Terminals in an Apertured Plate. Filed July 21, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,667,297. Flueric Temperature Sensor. Filed May 21, 1969. Patented June 6, 1972. Not available NTIS.

Patent 3,667,471. Surgical Clamp. Filed Aug. 15, 1969. Patented June 6, 1972. Not available NTIS.

Patent 3,667,850. Flare Radiometer. Filed Nov. 23, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,667,948. Topographic Map and Process for Symbolizing Photographs. Filed June 6, 1969. Patented June 6, 1972. Not available NTIS.

Patent 3,668,174. Heat Resistant Coating for Solder Connections. Filed Jan. 27, 1971. Patented June 6, 1972. Not available NTIS.

Patent 3,618,093. Obstacle Detection Radar System. Filed Mar. 14, 1963. Patented Nov. 2, 1971. Not available NTIS.

Patent 3,668,590. Long Pulse Diurnal Timer. Filed May 25, 1971. Patented June 6, 1972. Not available NTIS.

[FR Doc. 73-22570; Filed 10-23-73; 8:45 am]

GOVERNMENT-OWNED INVENTIONS

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DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. DEPARTMENT OF THE ARMY

Chief, Patents Division, Office of Judge Advocate General, Patent Division Room 2C-455, Pentagon, Washington, D.C. 20310

Patent 3,224,121. Apparatus for Optimizing Dredge Production. Filed Jan. 29, 1963. Patented Dec. 21, 1965. Not available NTIS.

Patent 3,228,287. Device for Compiling Information From an Anaglyph. Filed Feb. 9, 1960. Patented Jan. 11, 1966. Not available NTIS.

Patent 3,517,144. Integrated Circuit Package Programmable Test Socket. Filed Jan. 23, 1969. Patented June 23, 1970. Not available NTIS.

Patent 3,539,871. Circuit Protecting, Gas-Tube, Discharge Interrupter. Filed Jan. 15, 1969. Patented Nov. 10, 1970. Not available NTIS.

Patent 3,539,966. Microwave Connector. Filed July 23, 1968. Patented Nov. 10, 1970. Not available NTIS.

Patent 3,545,251. Controlled Axial Impact Testing Apparatus. Filed Dec. 24, 1968. Patented Dec. 8, 1970. Not available NTIS.

Patent 3,547,031. Rocket Means for Driving a Free Punch. Filed Aug. 10, 1965. Patented Dec. 15, 1970. Not available NTIS.

Patent 3,549,422. Rechargeable Metal-Air Battery. Filed Dec. 2, 1968. Patented Dec. 22, 1970. Not available NTIS.

Patent 3,551,719. Arc Lamp With Concentric Electrodes. Filed Jan. 7, 1969. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,551,843. Noncavity Laser Configuration. Filed Jan. 8, 1969. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,553,661. First-In, First-Out Memory. Filed June 27, 1967. Patented Jan. 5, 1971. Not available NTIS.

Patent 3,554,005. Continuous Tape Sampler. Filed June 10, 1968. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,554,007. Abrasion Tester and Method of Testing Abrasion Resistance of Flexible Sheet Material. Filed Aug. 7, 1969. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,554,008. Pressure Vessel Apparatus. Filed July 1, 1969. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,555,412. Probe for Detection of Surface Cracks in Metals Utilizing a Hall Probe. Filed Nov. 26, 1968. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,555,438. Digital Filter and Pulse Width Discriminator. Filed Aug. 29, 1969. Patented Jan. 12, 1971. Not available NTIS.

Patent 3,561,097. Explosive Spot Welding Method and Means Using Angular Orientation at the Welded Junction. Filed May 6, 1968. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,561,129. North-Seeking System. Filed Dec. 27, 1966. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,561,461. Fluidic Demodulator. Filed June 3, 1968. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,561,842. Light Disrupter. Filed Apr. 30, 1965. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,600,170. Image Forming Material and Method of Forming an Image Therefrom. Filed Sept. 2, 1969. Patented Aug. 17, 1971. Not available NTIS.

Patent 3,603,716. Superconducting R.F. Radiation Shield for High Q Circuits. Filed June 27, 1969. Patented Sept. 7, 1971. Not available NTIS.

Patent 3,604,647. Machine for Winding Bobbins. Filed Dec. 30, 1969. Patented Sept. 14, 1971. Not available NTIS.

Patent 3,607,474. Method of Making an Optical Mask for Reproducing Circuit Boards. Filed Jan. 26, 1968. Patented Sept. 21, 1971. Not available NTIS.

Patent 3,607,850. Polymers of Conjugated Fluorinated Dienes and Method of Making, Using as a Catalyst a Rhodium Salt or Complex. Filed Apr. 8, 1969. Patented Sept. 21, 1971. Not available NTIS.

Patent 3,611,391. Cassegrain Antenna With Dielectric Guiding Structure. Filed May 27, 1970. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,612,041. Apparatus for Detecting Ventricular Fibrillation. Filed July 25, 1969. Patented Oct. 12, 1971. Not available NTIS.

Patent 3,613,889. Floating Settler for Separation of Liquid and Solid Phases. Filed June 16, 1970. Patented Oct. 19, 1971. Not available NTIS.

Patent 3,613,935. Closure and Method of Making the Same. Filed Mar. 28, 1967. Patented Oct. 19, 1971. Not available NTIS.

Patent 3,619,906. Oscillating North-Seeking Platform. Filed May 5, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,620,089. Fluidic Gyro Caging and Nulling Device. Filed Nov. 6, 1969. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,620,539. Moisture-Proof Wire Holder. Filed Aug. 23, 1968. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,620,623. Optical System for Intermixing Dissimilar Step-and-Repeat Patterns. Filed Apr. 24, 1970. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,622,785. Intraoral Minimal Radiation Fluoroscope. Filed Mar. 3, 1970. Patented Nov. 23, 1971. Not available NTIS.

Patent 3,628,355. Eccentric-Ring Combination Lock. Filed Sept. 9, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,629,659. Gas Tube Isolator and Charging Circuit for Pulse Amplifiers in Phased Arrays. Filed Dec. 4, 1970. Patented Dec. 21, 1971. Not available NTIS.

Patent 3,632,355. Method of Controlling Leavening in a Bakery Mix at Varying Elevations. Filed June 16, 1970. Patented Jan. 4, 1972. Not available NTIS.

Patent 3,633,403. High Frequency Viscoelastic Vibrator. Filed Feb. 6, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,639,241. Grease Compositions. Filed Sept. 26, 1969. Patented Feb. 1, 1972. Not available NTIS.

Patent 3,645,261. Drinking, and Resuscitation Mask. Filed Aug. 4, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,693. Chemical Detector. Filed Nov. 3, 1969. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,833. Article and Method of Quasiisotropic Core Filaments. Filed May 20, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,905. Corrosion Inhibited Multi-Purpose Metal Cleaner. Filed Dec. 1, 1969. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,446. Binary Information Receiver for Detecting a Phase Modulated Carrier Signal. Filed Nov. 12, 1969. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,657,059. Quasi-Isotropic Sandwich Core. Filed May 20, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,663,783. Safety Load and Temperature Control System for Microwave Ovens. Filed Dec. 7, 1970. Patented May 16, 1972. Not available NTIS.

Patent 3,666,898. Quiet Listen/Talk Adaptors for Handsets or Other Typical Phones. Filed Dec. 10, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,666,925. Coded Tape and Open Contact Sensing Circuit. Filed May 21, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,668,293. Molecular Frequency Standard. Filed Mar. 17, 1970. Patented June 6, 1972. Not available NTIS.

Patent 3,672,218. System for Measuring Temperature of a Cryogenic Environment. Filed Jan. 26, 1971. Patented June 27, 1972. Not available NTIS.

Patent 3,672,975. Copolymerization of Polyacrylic Acid Within Nylon Structures. Filed June 9, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,672,980. Method of Rapidly Detecting Contaminated Semiconductor Surfaces. Filed Dec. 1, 1970. Patented June 27, 1972. Not available NTIS.

[FR Doc. 73-22558; Filed 10-23-73; 8:45 am]

Errata

All reference to Patent Number 3,684,563 to William H. Brown of Bartonville, Ill. for Galvanizing Continuous Elements With Prevention of Corrosion of the Pan appearing in the OFFICIAL GAZETTE of Aug. 15, 1972, should be deleted since no patent should have been granted.

All reference to Patent Number 3,684,603 to Charles O. Iltis, Neenah, Wis. for Method of Making a Two-Sided Towel, appearing in the OFFICIAL GAZETTE of Aug. 15, 1972, should be deleted since no patent should have been granted.

New Sales Prices for Official Gazette

The U.S. Government Printing Office recently announced changes in the sales price for copies of the OFFICIAL GAZETTE of the U.S. Patent Office. The new scale is effective January 1, 1974.

OFFICIAL GAZETTE—Patents:	
Subscription price	$211.00
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Single copy price	4.10
OFFICIAL GAZETTE—Trademarks:	
Subscription price	$ 60.25
Add for foreign mailing	15.10
Single copy price	1.25

RENE D. TEGTMEYER,
Nov. 7, 1973. *Acting Commissioner of Patents.*

Service by Publication

E. D. Smith

In accordance with Rule 47(b) of the Rules of Practice of the United States Patent Office in Patent Cases, Notice is hereby given of the filing on February 19, 1970, of an application for patent entitled "Single or Multiple Stage Bottom Hole Well Pump," on behalf of E. D. Smith, whose last known address is 850 Petroleum Club Building, Denver, Colorado. The application was made in compliance with Rule 47(b) and 35 U.S.C. 118 by Gerald Hughes without execution by said

E. D. Smith. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said E. D. Smith in connection with the said application must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,
Acting Assistant Commissioner for Patents.

Robert C. Knight

In accordance with Rule 47(b) of the Rules of Practice of the United States Patent Office in Patent Cases, notice is hereby given of the filing on February 19, 1970, of an application for patent entitled "Single or Multiple Stage Bottom Hole Well Pump," on behalf of Robert C. Knight, whose last known address is 850 Petroleum Club Building, Denver, Colorado. The application was made in compliance with Rule 47(b) and 35 U.S.C. 118 by Gerald Hughes without execution by the said Robert C. Knight. Notice of the filing directed to the above noted address has been returned undelivered.

Any action to be taken by the said Robert C. Knight in connection with the said application must be taken within thirty days of the publication of this notice.

WILLIAM FELDMAN,
Acting Assistant Commissioner for Patents.

Certificates of Correction for the Week of Nov. 20, 1973

Re. 27,627	3,681,684	3,710,635	3,719,153	3,726,635	3,736,350	3,745,314	3,751,000
D. 220,909	3,682,548	3,711,015	3,719,212	3,726,734	3,736,506	3,745,318	3,751,137
D. 226,152	3,686,917	3,711,654	3,719,370	3,726,816	3,736,790	3,745,364	3,751,181
D. 226,659	3,687,839	3,712,003	3,719,381	3,726,862	3,736,941	3,745,379	3,751,386
3,467,234	3,688,394	3,712,027	3,719,483	3,726,877	3,736,988	3,745,541	3,751,405
3,550,008	3,688,626	3,712,402	3,719,555	3,726,900	3,737,576	3,745,728	3,751,446
3,564,905	3,690,445	3,712,496	3,719,569	3,727,198	3,738,289	3,745,900	3,751,449
3,568,143	3,691,194	3,712,781	3,719,584	3,728,211	3,738,535	3,745,950	3,751,569
3,565,114	3,692,223	3,712,870	3,719,646	3,728,236	3,738,588	3,746,068	3,751,688
3,592,532	3,692,784	3,712,926	3,720,005	3,728,317	3,738,756	3,746,669	3,751,724
3,601,554	3,693,161	3,713,330	3,720,173	3,728,417	3,738,907	3,746,884	3,751,751
3,602,790	3,693,954	3,713,650	3,720,437	3,728,754	3,739,009	3,747,002	3,751,864
3,604,456	3,694,068	3,713,775	3,720,478	3,729,026	3,739,346	3,747,187	3,751,934
3,610,987	3,694,460	3,713,804	3,720,553	3,729,313	3,739,614	3,747,290	3,752,091
3,615,404	3,694,654	3,714,167	3,721,285	3,729,318	3,739,941	3,747,405	3,752,172
3,615,546	3,694,884	3,714,619	3,721,577	3,729,877	3,740,086	3,747,683	3,752,202
3,616,624	3,694,955	3,714,771	3,721,587	3,730,220	3,740,118	3,747,785	3,752,222
3,620,651	3,695,970	3,714,752	3,721,652	3,730,251	3,740,410	3,747,902	3,752,294
3,627,339	3,696,146	3,714,805	3,721,660	3,730,412	3,740,434	3,747,988	3,752,328
3,635,051	3,697,429	3,715,224	3,721,751	3,730,608	3,740,572	3,748,074	3,752,359
3,635,780	3,697,493	3,715,544	3,721,924	3,730,805	3,740,637	3,748,098	3,752,502
3,638,692	3,697,785	3,716,618	3,722,154	3,730,859	3,741,070	3,748,159	3,752,739
3,641,468	3,698,249	3,716,652	3,722,497	3,730,920	3,741,130	3,748,200	3,752,817
3,643,125	3,699,344	3,716,694	3,722,590	3,731,085	3,741,298	3,748,240	3,752,865
3,647,435	3,699,555	3,716,760	3,722,776	3,731,485	3,742,258	3,748,251	3,753,087
3,650,080	3,699,853	3,716,841	3,722,790	3,732,260	3,743,305	3,748,269	3,753,126
3,651,283	3,700,960	3,717,002	3,723,143	3,732,261	3,743,431	3,748,276	3,753,141
3,655,569	3,701,804	3,717,097	3,723,173	3,732,427	3,743,552	3,748,284	3,753,153
3,661,945	3,703,444	3,717,181	3,723,275	3,732,866	3,743,618	3,748,408	3,753,487
3,664,831	3,703,483	3,717,205	3,723,279	3,733,203	3,743,732	3,748,619	3,753,495
3,665,778	3,703,539	3,717,382	3,723,345	3,733,283	3,743,736	3,748,623	3,753,653
3,669,933	3,703,595	3,717,625	3,723,421	3,733,345	3,743,786	3,748,657	3,753,847
3,670,754	3,703,828	3,717,633	3,723,524	3,733,563	3,743,795	3,748,740	3,754,081
3,672,833	3,705,035	3,717,639	3,723,528	3,733,586	3,743,798	3,748,760	3,754,242
3,672,911	3,705,214	3,717,669	3,723,719	3,733,705	3,743,959	3,748,850	3,754,387
3,673,217	3,706,053	3,717,709	3,723,977	3,733,855	3,743,965	3,749,359	3,754,817
3,674,945	3,706,924	3,718,166	3,724,078	3,734,040	3,744,032	3,749,383	3,754,957
3,674,774	3,708,291	3,718,259	3,724,224	3,734,470	3,744,376	3,749,617	3,754,973
3,676,212	3,708,469	3,718,611	3,725,019	3,734,589	3,744,407	3,749,887	3,754,993
3,678,292	3,708,754	3,718,658	3,725,222	3,734,731	3,744,432	3,749,964	3,755,056
3,678,397	3,709,640	3,718,762	3,725,378	3,734,835	3,744,867	3,750,096	3,755,083
3,678,764	3,709,744	3,718,770	3,725,537	3,734,874	3,744,949	3,750,200	3,755,158
3,679,451	3,709,845	3,718,871	3,725,642	3,735,149	3,744,997	3,750,474	3,755,268
3,680,218	3,709,886	3,718,959	3,725,788	3,735,504	3,745,014	3,750,606	3,755,472
3,680,476	3,710,253	3,718,969	3,725,903	3,735,591	3,745,189	3,750,714	3,755,489
3,681,374	3,710,311	3,719,007	3,726,608	3,735,747	3,745,259	3,750,932	

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 27, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-03-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-09-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	7-24-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-07-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-21-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-01-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food: Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-17-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-02-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-02-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-29-72
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-21-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,760,173 to 2,772,414, inclusive
Plant Patents..... Numbers 1,526 to 1,531, inclusive

REISSUES

NOVEMBER 20, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

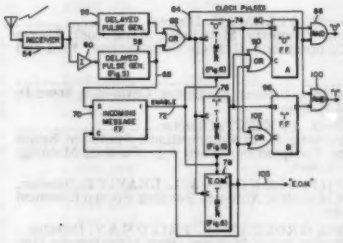
27,810
TWO-STAGE COMMUNICATION DEVICES HAVING COMBINED CLOCK AND INFORMATION SIGNALS

William B. Buehrle, Phoenix, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Original No. 3,510,780, dated May 5, 1970, Ser. No. 584,035, Sept. 12, 1966. Application for reissue July 21, 1971, Ser. No. 164,791

Int. Cl. H04b *1/16*

U.S. Cl. 325—321 6 Claims



An elasped time digital communication system is disclosed wherein both the digital information content and the timing or clock information is represented by the elapsed time for two successive transitions between electrical states. After a first or initiating transition to an active state, each successive transition indicates that information is available. By measuring the time between successive transitions, both information content and timing signals are recovered.

27,811
TAPERED AND GROOVED BOBBIN

Julio Limantour, Durham, Pa., assignor to Julio Limantour

Original No. 3,292,876, dated Dec. 20, 1966, Ser. No. 431,511, Feb. 10, 1965. Application for reissue Jan. 12, 1970, Ser. No. 15,320, which is a continuation of abandoned reissue application Ser. No. 710,440, Feb. 26, 1968

Int. Cl. B65h *75/10*

U.S. Cl. 242—118.31 6 Claims

An improved bobbin is formed with a body of reinforced plastic, having end caps of a resilient plastic material. The larger end has around it a plurality of parallel disposed rings which may be formed so that they are integral with the body portion of the bobbin.

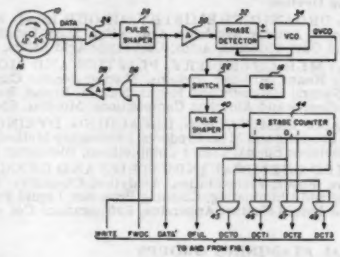
27,812
HIGH DENSITY STORAGE AND RETRIEVAL SYSTEM

James Pershing Lipp, Oklahoma City, Okla., assignor to Honeywell Information Systems Inc.

Original No. 3,643,228, dated Feb. 15, 1972, Ser. No. 869,698, Oct. 27, 1969. Application for reissue Jan. 2, 1973, Ser. No. 320,024

Int. Cl. G11b *5/00*

U.S. Cl. 340—172.5 8 Claims



A high-density recording and reproducing system in which information is divided into groups of binary digits (bits) with different flux transition patterns recorded in associated storage cells to represent each group of bits and wherein each pattern is recorded and read independently of bits in adjacent cells resulting in reduced pulse crowding effects.

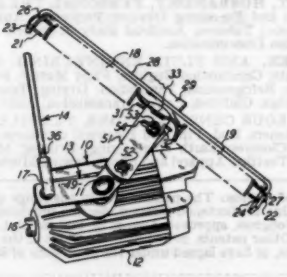
27,813
HYDROSTATIC TRANSMISSION CONTROL FOR VEHICLES

Donald G. Haffner, Greendale, Wis., assignor to Jacobsen Manufacturing Company, Racine, Wis.

Original No. 3,541,878, dated Nov. 24, 1970, Ser. No. 788,796, Jan. 3, 1969. Application for reissue Aug. 10, 1972, Ser. No. 279,690

Int. Cl. G05g *7/12*

U.S. Cl. 74—474 6 Claims



A hydrostatic transmission control for vehicles including a hydraulically responsive unit having a mechanical

control shown to be in the form of a lever operatively connected with the hydraulic mechanism for selectively setting the latter into positions corresponding to a forward position and a reverse position and a neutral position for the vehicle. Spring means are connected to the lever to influence its position in opposition to a manual control member which is also connected to the lever for setting the hydraulic unit in a selected position. Further, the manual control is shown to be a foot pedal type of control, and stop means are associated with the control for limiting both forward and reverse positions of the hydraulic unit and thereby limiting the vehicle speed, as desired. The lever has adjusting means for setting it in a position corresponding to the neutral position, and the spring means is also arranged for automatically establishing the neutral position when the manual control is released.

27,814

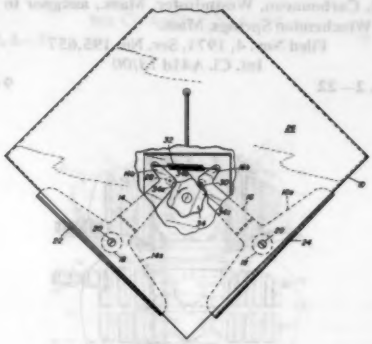
PAPER JOGGER

Walter J. Hanson, Old Greenwich, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Original No. 3,593,992, dated July 20, 1971, Ser. No. 818,536, Apr. 23, 1969. Application for reissue Nov. 8, 1972, Ser. No. 304,780

Int. Cl. B65h *31/38*

U.S. Cl. 271—89 **10 Claims**



A jogger for aligning stacked sheets of paper or the like comprising a tilted table and a pair of jogger arms pivotally mounted to the table. The jogger arms carry paddle portions which extend above the tabletop along two adjacent sides of the table. Followers on each arm are operatively engaged by a multilobed cam which causes the arms and associated paddles to pivot in synchronism and bring into alignment sheets stacked on the tabletop. A prop may be provided on the tabletop to facilitate the alignment of cross-stacked sheets.

PLANT PATENTS

GRANTED NOVEMBER 20, 1973

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,410

AZALEA PLANT

Sidney B. Hutton, Jr., West Grove, Pa., assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Apr. 12, 1972, Ser. No. 243,486

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—55 **1 Claim**

An azalea plant having large flowers of bright yellow color, in large trusses and with a blotch of deeper yellow-orange color on the upper petal.

3,411

PEACH TREE

Chris Floyd Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351

Filed Feb. 24, 1972, Ser. No. 229,218

Int. Cl. A01h *5/03*

U.S. Cl. Plt.—43 **1 Claim**

A variety of peach tree which is of medium-to-large size, vigorous, medium dense, and medium upright in growth; the tree being a productive and regular bearer of medium-to-large size, early ripening, clingstone fruit having firm, yellow flesh, and yellow skin substantially overspread with red.

3,412

CHRYSANTHEMUM PLANT

Barrie John Machin, East Broyle Estate, England, assignor to Frampton's Nurseries Limited, Chichester, Sussex, England

Filed Dec. 27, 1971, Ser. No. 212,825

Int. Cl. A01h *5/00*

U.S. Cl. Plt.—81 **1 Claim**

1. A new and distinct variety of *Chrysanthemum morifolium* Bailey (pot type), substantially as herein shown and described, having incurving decorative reddish purple petals characterized particularly as to novelty by the fact that the inner faces of its petals have a color substantially as deep as RHS 70C, and by improved color retention under high light conditions.

PATENTS

GRANTED NOVEMBER 20, 1973

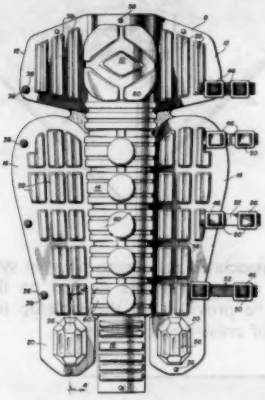
GENERAL AND MECHANICAL

3,772,704

PROTECTIVE PAD FOR THE LEG AND ANKLE

Rene R. Carbonneau, Westminster, Mass., assignor to Mylec, Inc., Winchendon Springs, Mass.

Filed Nov. 4, 1971, Ser. No. 195,657
Int. Cl. A41d *13/00*
U.S. Cl. 2—22 **9 Claims**



A protective pad for athletics comprising two sheets of superposed material, the first or outer sheet being of molded plastic and having a plurality of protuberances thereon, the plastic being flexible but self-sustained, and the other or inner layer being of foamed plastic especially cut and applied to the first layer to prevent tearing and special mechanical fasteners for securing the layers together with buckles securing the protective padding in position on the leg, said fasteners being of the snap-in type.

3,772,705

PAPER COVERALLS WITH STITCHED-IN FEET COVERS

Alta M. Angel, and Kenneth G. Angel, both of 234 Date Ave., Imperial Beach, Calif.

Filed Sept. 22, 1971, Ser. No. 182,747
Int. Cl. A41d *13/02*
U.S. Cl. 2—79 **1 Claim**

Paper coveralls for use in industrial clean room applications having stitched-in feet covers dimensioned for being utilized with or without shoes and having a pattern for minimizing waste.

3,772,706

BOWLING GLOVE

Donato J. Brigidi, Huntingdon Valley, Pa., assignor to John L. Hebling, Jr., Willow Grove, Pa., a part interest

Filed Feb. 12, 1973, Ser. No. 331,914
Int. Cl. A41d *19/00*
U.S. Cl. 2—161 A **10 Claims**

The front panel of a bowling glove is provided with a pocket for receiving a quadrant-shaped spring means for accelerating a bowling ball at the time of the thumb release.

3,772,707

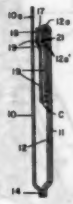
HAIR SPRAY FACIAL SHIELD

Michael Alosi, 365 N. Pine St., and Rieta M. Kellenbeck, 515 North St., both of Susanville, Calif.

Filed Oct. 8, 1971, Ser. No. 187,826
Int. Cl. A41d *13/00*
U.S. Cl. 2—174 **9 Claims**

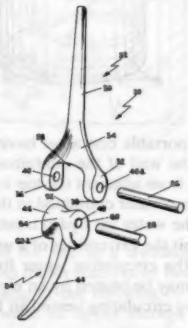
A protective shield assembly for hair spray and the like, said assembly comprising a facial shield formed from a sheet of flexible plastic and adapted to cover a user's face and approximately engage such along the hairline areas to prevent inhalation of the spray or contact of such with the eyes. The assembly is provided with a bifurcated support handle which may be squeezed in one hand to flex the shield for proper fit, leaving the other hand free for application of hair spray.

3,772,708
CONCEALED POCKET
Thomas P. Segelin, 3716 Latimore Dr., Shaker Heights, Ohio
Filed Sept. 21, 1972, Ser. No. 291,086
Int. Cl. A41d *27/20*
U.S. Cl. 2—253 1 Claim



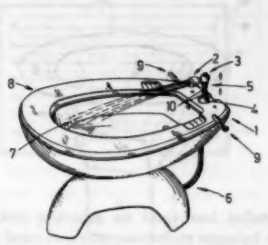
A pocket structure intended to be secured in a garment is constructed in such a way that a thief, slipping his hand in the pocket, will find the pocket apparently empty, whereas, a panel intermediate the back panel which is secured to the garment and the front panel which is spaced from the garment divides the pocket structure into an apparent pocket and a concealed pocket which is closed by means of a flap secured to the front panel and normally folded down over the intermediate panel so as to guide the hand of the thief into the apparent pocket which would be empty insofar as valuables are concerned.

3,772,709
PROSTHETIC JOINT
Alfred B. Swanson, 2945 Bonnell S.E., Grand Rapids, Mich.
Filed June 15, 1972, Ser. No. 263,304
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 9 Claims



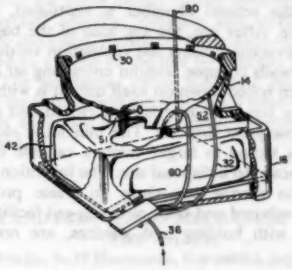
The prosthesis is surgically implanted in a joint and comprises a proximal and distal member hinged together for essentially unidirectional bending. The proximal member is rigid and includes a yoke portion. The distal member is flexible to provide limited pliability and includes a cylindrical header portion which fits within the yoke and is connected thereto by a pin.

3,772,710
SANITARY APPLIANCE
Paul Lucien Coutellier, 36 rue Bui-thi-Xuan, Saigon, South Vietnam
Filed Apr. 28, 1972, Ser. No. 248,450
Claims priority, application South Vietnam, Apr. 30, 1971, 2125
Int. Cl. A47k *3/22*, *11/08*
U.S. Cl. 4—7 7 Claims



A sanitary appliance, e.g. a bidet has a pan or basin and a spray device with guided jets and a pipe portion for connection to a supply pipe. The spray device is adjustable in both direction and height with respect to the pan or basin.

3,772,711
TOILET WITH DISPOSABLE RECEPTACLE
Samuel Spector, 352 Atlantic Ave., Marblehead, Mass.
Filed Apr. 3, 1972, Ser. No. 240,674
Int. Cl. E03d *11/10*
U.S. Cl. 4—78 9 Claims



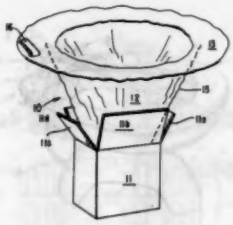
A toilet is provided with a disposable receptacle which is self-sealing and detachably connected to the permanent parts of the toilet. A foot-operated pedal when depressed simultaneously flushes the bowl and temporarily opens a spring-loaded receptacle cover. A spring-loaded platform supports the receptacle and is connected to a guage rod which, when moved by the platform under the weight of the receptacle, indicates that the receptacle is full.

3,772,712

DRY CLOSET

Charles E. Renn, Rt. 2, Hampstead, Md.; Rolfe Pottberg, 3100 Elm Ave., Sparks, Md., and Charles J. Owens, 7106 W. Belona Ave., Baltimore, Md.

Filed Sept. 1, 1971, Ser. No. 176,914
Int. Cl. A47k *11/02*
U.S. Cl. 4—142 13 Claims



A dry closet comprises a vessel having an open top and provided with a seat member adjacent the open top. A receptacle holding member is positioned within the vessel and includes a lower container receiving portion and an upper, foraminous, portion. A disposable receptacle is positioned on the holding member prior to use. The receptacle includes a container portion, preferably in the form of a closeable box, and a bag portion much larger in volume than the box when extended upwards of the box in unfolded condition. The bag is closed at the bottom and open at its top and is secured at its lower end within the box and forms a water tight receptacle bag within the vessel. A rim portion at the upper, open, end of the bag is placeable over the upper surface of the seat portion at the top of the vessel. The receptacle holding member and receptacle thus divided the vessel into a first, closed, chamber comprising the space between the vessel walls and the receptacle holding member and a second chamber having an open top comprising the space within the receptacle holding member. With the receptacle in place, vacuum is applied to the first chamber thus causing the receptacle to be held in place against the foraminous upper portion of the receptacle holding member. During use, the second chamber is ventilated, utilizing a vacuum source. After use, the top area of the bag is folded together and evacuated using the ventilation vacuum source, such that the walls collapse without entraining air in the bag. The bag is then rolled down on itself until it is within the box container. The box container is then closed and sealed and stored for subsequent disposal. The individual closed boxes are preferably stored in larger carriers capable of carrying several used boxes to a disposal site. The invention is particularly suited to marine use since no waste products are discharged overboard and since pumping-out facilities, necessary for use with holding tank devices, are not required ashore.

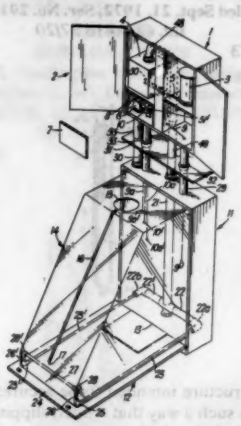
3,772,713

STEAM BATH UNIT

Henry Albert Roullier, Wallington, England, assignor to Relion Radiation Limited, Wallington, Surrey, England

Filed June 1, 1971, Ser. No. 148,441
Claims priority, application Great Britain, June 17, 1968, 28,780/68
Int. Cl. A61h *33/06*
U.S. Cl. 4—164 7 Claims

A steam bath unit consisting of an inflatable flexible envelope attached to a cabinet, and provided with an air blower for inflating the envelope, and also a steam generator for supplying the steam environment within the envelope. Optionally



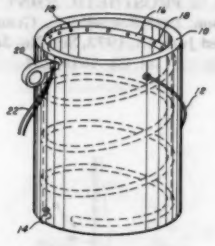
the blower may direct hot or cold air into the envelope and may be controlled by control cords operable from within the envelope.

3,772,714

WHIRLPOOL BATH FOR LIMB EXTREMITIES

Robert L. Sealby, P.O. Box 639, Evergreen, Colo., and Ralph G. Bate, P.O. Box 128, Idaho Springs, Colo.

Filed Dec. 2, 1971, Ser. No. 204,176
Int. Cl. A61h *9/00*
U.S. Cl. 4—179 2 Claims



A lightweight, portable container having a perforated tube incorporated in the wall of the container along a substantial length of the wall from adjacent the top to the bottom thereof, for injecting air into water contained in the container, causing a circulation of the water for hydro treatment. The container is of a size to admit the extremities of a user's limb which may be immersed in the circulating water for its therapeutic effects. The water may be heated by an electrical heater coil in the container or by circulating heated air through the tube.

3,772,715

CONTAINER-DISPENSER PACKAGE FOR PLURALITY OF PRODUCTS

Louis V. Nigro, Saugus, Mass., assignor to The Gillette Company, Boston, Mass.

Filed Aug. 19, 1971, Ser. No. 173,050
Int. Cl. E03d *9/02*
U.S. Cl. 4—228 4 Claims

A molded container-dispenser package having an inviolate chamber having a first product disposed therein, the container

further having a pocket on an exterior wall for receiving and retaining a second product, and a support structure integral

with the container for orienting and supporting the structure in its operating environment.

3,772,716

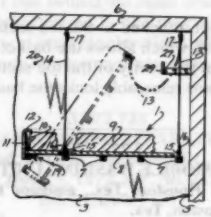
CONVERTIBLE BED

John W. Ratcliff, R.R. 1, Marengo, Ill.

Filed Aug. 26, 1971, Ser. No. 175,051

Int. Cl. A47c *19/06;* **A47d** *7/04*

U.S. Cl. 5—10 **7 Claims**



A convertible bed for use in a dwelling of limited floor space, such as a travel trailer, camper or boat. The bed is supported from the ceiling of the dwelling by a series of cables and is movable between an upper storage position adjacent the ceiling to a lower sleeping position. One pair of cables is attached to the rear side edge of the bed, while a second pair of cables are attached to the ends of the bed, but spaced from the front side edge. To raise the bed from the lower sleeping position to the storage position, the front edge of the bed is depressed, causing the bed to pivot about the connection of the end cables to the bed, thereby tilting the rear side edge of the bed upwardly above the level of supports mounted on the walls of the dwelling. With the rear edge of the bed located above the level of the supports, the bed is pushed to the rear and the front edge is elevated to the storage position and locked in the storage position by means of slide bolts.

3,772,717

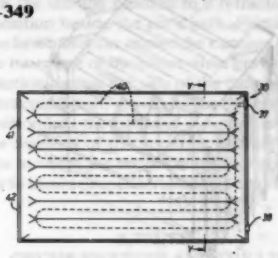
INFLATABLE MATTRESSES AND CUSHIONS

Yat Chuen Yuen, and Kin Sun Yuen, both of 214A Des Voeux Road Central, Hong Kong

Filed Feb. 11, 1971, Ser. No. 114,526

Int. Cl. A47c *27/08*

U.S. Cl. 5—349 **10 Claims**



The invention provides an improved inflatable mattress comprising at least two compartments situated one above the other, at least one of the compartments being internally partitioned, and an aperture in each of the said compartments whereby the said compartments can be separately inflated.

3,772,718

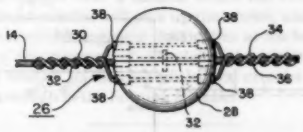
CABLE INDICATING, FLOTATION AND VIBRATION DAMPING DEVICES

Harrison L. Williams, Euclid, Ohio, assignor to Preformed Line Products Company, Cleveland, Ohio

Filed Aug. 16, 1971, Ser. No. 172,181

Int. Cl. B63b *21/52*

U.S. Cl. 9—8 R **11 Claims**



Appliances for linear bodies having application, for example, as aircraft warning, flotation and vibration damping devices are disclosed. Relatively large, light-weight members are secured to a cable or the like by helically preformed appliances. The appliances either have one end portion embedded in the light-weight member or are interconnected with attachment apparatus for the member. Several embodiments are disclosed.

3,772,719

MOTIVE AND PROPULSION MECHANISM FOR USE IN THE WATER

Jumpei Ohnaka, 9–37 Honmachi, Kurashiki, Japan

Filed Dec. 23, 1971, Ser. No. 211,328

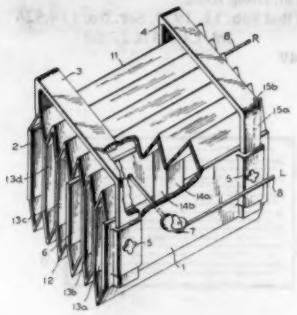
Claims priority, application Japan, Dec. 25, 1970, 45/128912

Int. Cl. A63b *31/00*

U.S. Cl. 9—307 **3 Claims**

A main body includes a bellows mechanism. In the first embodiment of the present invention, this bellows mechanism includes a movable vane, and in the second embodiment of the present invention this bellows includes a movable endless or tubular bellows. A rope is adapted to be attached to either the hands or feet of the swimmer and is operatively connected to the movable portion of the bellows closer to one end thereof than the opposite end. Thus, alternate movement of the right and left hands or feet will cause alternate movement of the

movable part of the bellows. However, since the rope is operatively connected closer to one end of the bellows than the other, the movement of the movable part of the bellows is uneven and accordingly causes a forcing of fluid through the main body of the bellows.



3,772,720

METHOD FOR MAKING A THREAD FORMING MEMBER

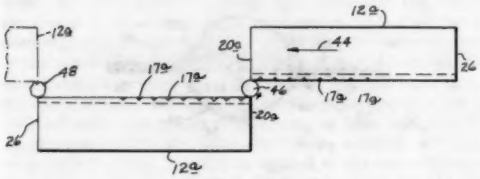
Yoshio Yamamoto, Kyoto, Japan, assignor to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Filed Mar. 22, 1971, Ser. No. 126,447

Claims priority, application Japan, Apr. 11, 1970, 45/030970

Int. Cl. B21d *17/04*; **B21h** *3/06*

U.S. Cl. 10—10 R **8 Claims**



A method of making a thread-forming screw of arcuate polygonal cross-section from a blank of circular cross-section comprises rolling the blank between thread-rolling dies having a series of spaced apart grooves that are parallel to the longitudinal axis of the blank. The grooves define obtuse angles large enough to permit the blank to roll into and out of the grooves during the thread-forming. The thread thus formed presents a root cross-section formed by an odd number of intersecting circular arcs and a crest cross-section of a like number of circular arcs and respectively concentric with the root cross-section arcs. The arcs at the crest are joined by smaller thread-swaging arcs or lobes that are of a radius substantially equal to depth of the thread.

3,772,721

APPARATUS FOR TEMPORARILY ATTACHING INSOLES

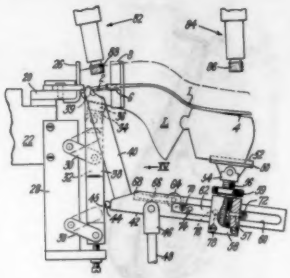
Peter L. Stapleton, Evington, Leicester, and Ivor J. R. LeVesconte, Birstall, Leicester, both of England, assignors to USM Corporation, Boston, Mass.

Filed Jan. 15, 1973, Ser. No. 323,892

Int. Cl. A43d *00/09*

U.S. Cl. 12—1 R **12 Claims**

Apparatus for impaling a shoe insole on pins projecting from a last bottom including a shoe support which raises the forepart of a last with a registered insole thereon against a hammer which is actuated to drive the insole forepart against the last bottom. The support thereafter raises the heel end of the last against another hammer which drives the heel end of the insole against the last bottom.



3,772,722

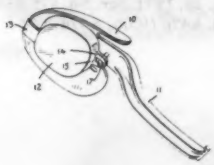
SHOE TREE WITH ARTICLE BASKET

Jobst Ulrich Gellert, Toronto 19, Ontario, Canada, assignor to Helmac Products Corporation, Flint, Mich.

Continuation-in-part of Ser. No. 232,131, March 6, 1972. This application Aug. 10, 1972, Ser. No. 279,699

Int. Cl. A43d *5/00*

U.S. Cl. 12—115.8 **6 Claims**



An article basket attached to the toe section of a shoe tree by a suitable means which allows the basket to be folded into and removed from the cavity of the toe section. Complementary fastening means releasably locks the basket inside the toe section.

3,772,723

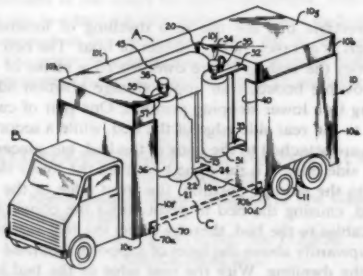
MOBILE WASHING UNIT

John H. Krimm, Houston, Tex., assignor to Krimm Enterprises, Inc., Houston, Tex.

Filed Oct. 27, 1971, Ser. No. 193,103

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 D **24 Claims**



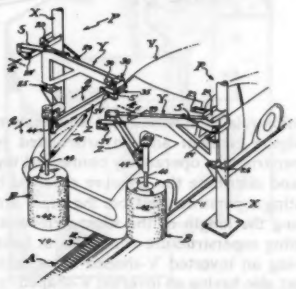
Apparatus that is movable between various locations for washing vehicles includes a movable frame having a

passageway therethrough for receiving a vehicle. Rotatable brushes are mounted on the frame at the passageway for cleaning the vehicle as it is driven through the passageway and, the position of the brushes is adjustable for receiving vehicles of various sizes.

3,772,724
COMPACT WRAP-AROUND CAR WASH BRUSH APPARATUS

Earl E. Wilson, 1328 Newport Ave., Long Beach, Calif.

Filed Dec. 30, 1971, Ser. No. 214,156
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D **6 Claims**

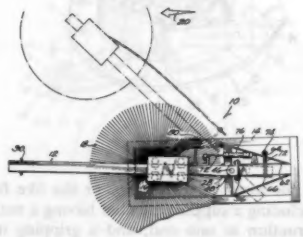


This invention relates to automobile washing wherein right and left hand brushing units traverse the substantially vertically disposed planar surfaces of the vehicle body and particularly the front, both sides and back surfaces, and wherein the said right and left hand units carrying the brushing apparatus are each characterized by articulated inner and outer arms supported from a stationary stand and carrying powered brush means that engage the surfaces being washed so as to articulate the apparatus into movement over said surfaces. In accordance with this invention the said right and left hand brushing units are placed at closely related sequential stations along the car wash alley, so that the single brushes of the two units respectively occur one behind the other when at the center of said alley, and characterized by the overlapping arms of the two units operating at separate elevations, while the brushes of the two units operate at a common elevation.

3,772,725
CAR WASHING APPARATUS

Richard J. Shelstad, 3611 W. Normandy Ct., Mequon, Wis.

Filed June 15, 1972, Ser. No. 263,000
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D **15 Claims**

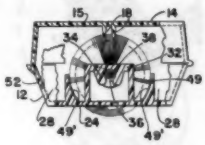


As a car moves along a predetermined path through a wash bay, it sequentially engages a pair of oppositely rotating brushes centrally disposed in its path. Each brush is suspended from a carriage which is axially movable along an overhead boom. The booms are pivotally mounted at their inner ends on opposite sides of the bay. The boom pivot axis is angularly oriented so that the boom is urged by gravity to the starting position with its outer free end inclined downwardly. Continued forward movement of the car swings the boom forwardly from the starting position to a retracted position to a retracted position beside the car's path. Frictional resistance between the brush and car causes the carriage to move axially towards the inner end of the boom while gravity maintains the brush in traction against the side of the car. As the car moves past the retracted brush, gravity urges the boom towards the starting position and the carriage is moved axially by gravity towards the free end of the boom. A hydraulic damper controls the rate at which the boom swings back towards the starting position to insure proper scrubbing of the rear of the car.

3,772,726
CRUMB SWEEPER AND THE LIKE

Sam Kupperman, and Dennis I. Kupperman, both of 4139 Main St., Skokie, Ill.

Filed Feb. 11, 1972, Ser. No. 225,423
Int. Cl. A47l 11/00
U.S. Cl. 15—48 **6 Claims**

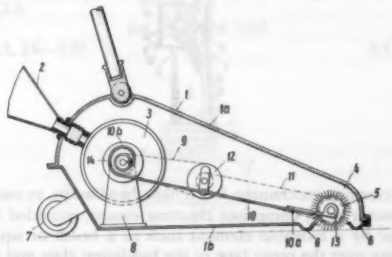


A crumb sweeper and the like comprising, a housing formed of a pair of sections hingedly joined and detachably interlocked which supports a rotatable brush so that when the sweeper is moved over a surface which has crumbs and the like, the brush bristles will pick up the crums, and wherein the sweeper has means engaging the bristles as the brush member rotates for the purpose of dislodging the picked up crumbs from said bristles so that said dislodged crumbs will be emptied into a trough in the housing member.

3,772,727
SWEEPING MACHINE

Eberhard Worwag, Stuttgart, Germany, assignor to Progress-Elektrogerate Mauz & Pfeiffer, Stuttgart-Botnany, Germany

Filed Apr. 15, 1971, Ser. No. 134,381
Claims priority, application Germany, Apr. 18, 1970, P 20 18 667.8
Int. Cl. A47l 11/32
U.S. Cl. 15—49 C **7 Claims**



A sweeping machine with dust withdrawal for floors and carpets with at least one motor-driven rotatable cleaning tool partially protruding downwardly from the machine housing, in

which the cleaning tool is driven by the motor through the intervention of a transmission, the axes of rotation of said motor and of said transmission being substantially parallel to each other and to the plane to be swept by said tool said tool being supported by arm means pivotable either about the axis of rotation of said motor or about the axis of rotation of said transmission means. That end of the arm means remote from the tool is provided with or forms a spiral spring for continuously urging the arm means and thereby the tool against the floor.

3,772,728

SCOUR PAD AND METHOD OF MAKING THE SCOUR PAD

Carl W. Johnson, 167 N. Plummer Ct., Neenah, Wis.

Filed Oct. 29, 1971, Ser. No. 193,715
Int. Cl. A47l *17/08*
U.S. Cl. 15—209 R **12 Claims**

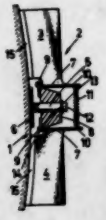
A method of making a scour pad from a length of tubular plastic fabric netting characterized by the wrinkling or the rucking of said fabric into a heap, folding a portion of said fabric back over and enveloping said rucked heap, and maintaining the resulting spherical-like heap or bun shape by means of two incorporated rubber bands; and the provision of a specific stepped mandrel means for practising said method.

3,772,729

CLEANING MECHANISM FOR VEHICLE HEADLAMPS

Willy Evard, 19 place des Tilleuls, Andenne, Belgium

Filed Feb. 1, 1972, Ser. No. 222,555
Claims priority, application Belgium Feb. 2, 1971, 762.425
Int. Cl. B60s *1/44*
U.S. Cl. 15—250.22 **7 Claims**



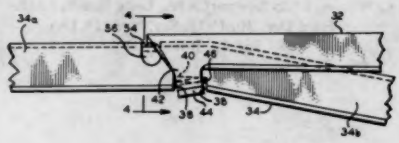
A cleaning mechanism for vehicle headlamps, in particular for motor cars, comprises cleaning means, provided in particular by a movable element such as a brush or squeegee, moving over the outer face of the headlamp glass and means, such as helix shaped arms, rotating around a stem supported on the headlamp glass, being provided in order to cause the rotation of such element facing the headlamp glass by the force of the wind resulting from the advance motion of the vehicle.

3,772,730

WINDSHIELD WIPER BLADE ASSEMBLY

John J. Plisky, Munster, Ind., assignor to The Anderson Company

Filed May 26, 1972, Ser. No. 257,096
Int. Cl. A47l *1/00*; B60s *1/02*
U.S. Cl. 15—250.42 **2 Claims**



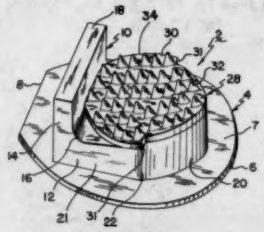
This invention relates to windshield wiper assemblies which include a wiping element and an articulated pressure-distributing superstructure operatively connected together so as to transmit and distribute the pressure received by the pressure-distributing superstructure from the wiper arm to spaced locations along the length of the wiping element. The pressure-distributing superstructure comprises at least one lower member having an inverted V-shaped cross section and an upper member also having an inverted V-shaped cross section. The upper member is rockably connected to the lower member by a pair of inturned tabs seated in a pair of notches in the lower member. The upper and lower members have, at least proximate the rockable connection of these members, congruent cross-sectional shapes and the top of the end of the upper member is disposed further outwardly than its bottom. The lower member has a recess in its top ridge immediately below the end of the upper member.

3,772,731

DENTURE SUPPORT DEVICE

Jacques A. Griesmar, 531 S.O.M. Center Rd., Mayfield Village, Ohio

Filed June 2, 1971, Ser. No. 149,223
Int. Cl. A47g *29/08*
U.S. Cl. 15—268 **9 Claims**



A device for supporting dentures or the like for cleaning purposes including a support member having a seat-like abutment construction at one end, and a gripping member attached to the support member having a plurality of flexible projections extending outwardly therefrom adapted for supporting a denture thereon and coacting with the seat-like abutment construction for holding the denture against movement during cleaning thereof.

3,772,732

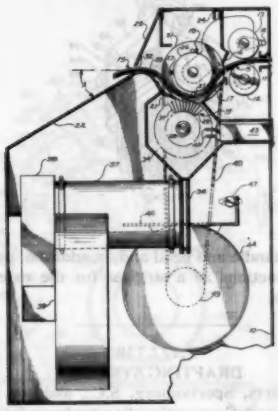
RUG DUSTER

John A. Gilmore, Santa Barbara, Calif., assignor to Laundry Machine Specialties Corporation, Santa Barbara, Calif.

Continuation-in-part of Ser. No. 848,619, Aug. 8, 1969, abandoned. This application June 16, 1971, Ser. No. 153,698

Int. Cl. A47l *5/38*

U.S. Cl. 15—309 13 Claims



A rug duster removes dust and the like from rugs and mats by the action of brushes, beating bars, spreader bars and vacuum. Rugs are passed through feed rolls and over a beater roll with raised beater bars which flex the rugs' backings and open the rugs' naps. While the naps are open, a brush and vacuum remove dust and lint. The naps are further opened by flexure bars at the exit of a vacuum chamber which are spaced apart and have their axes in line with the path of the rug to flex the rug and develop a sinuous flex.

3,772,733

CASTORS, PARTICULARLY IN THE FORM OF SWIVEL CASTORS

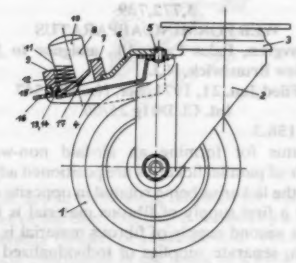
Herbert Stosberg, Wermelskirchen-Tente/Rheinland; Gunter Reinhards, Wermelskirchen/Rheinland; Siegfried Engels, Wermelskirchen-Tente/Rheinland, and Hans-Jurgen Sauer, Wermelskirchen/Rheinland, all of Germany, assignors to Firm Tente-Rollen Gesellschaft mit beschrankter Haftung Compagnie, Wermelskirchen-Tente/Rheinland, Germany

Filed Jan. 28, 1972, Ser. No. 221,559

Claims priority, application Germany, Feb. 27, 1971, P 21 09 458.6

Int. Cl. B60b *33/00*

U.S. Cl. 16—35 17 Claims



A castor, particularly in the form of a swivel castor, is provided with a locking mechanism for locking the running wheel against running and/or swivelling movement. The locking comprises as locking member a press component which is axially moveable in a guide bush arranged at the castor fork. The press component can be pressed against the pressure of a spring into its locking position and then holds the locking mechanism in its locking position. The press component has at a point on its periphery at least one latching notch by means of which the press component can latch in its locking position under the counterpressure of the spring against a latching edge and is then held latched by the stressed spring. A release lever is provided by which the press component can be unlatched again, against the pressure of the spring. The guide bush may be arranged substantially vertically at the castor fork, and the press component notched on its periphery may project beyond the upper surface of the guide bush and may form a pushbutton for foot actuation.

3,772,734

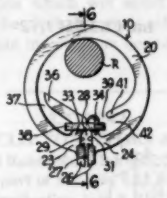
OPENABLE RING FOR CURTAINS

Eugene Kimel, 6, Rue Mercoeur, 75 Paris, France

Continuation-in-part of Ser. No. 42,706, June 2, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,638

Int. Cl. E05d *13/02*

U.S. Cl. 16—87.2 3 Claims



An openable curtain ring having a body in the form of a loop carrying two jaws at the ends of the loop. The jaws are adapted to clamp against a piping on the curtain. The curtain can be released by deforming the loop so that the jaws are moved apart. Releasable locking means are provided to maintain the jaws clamped against the piping.

An embodiment is disclosed in which a hook is added to the ring for supporting a second curtain which hangs alongside the first-mentioned curtain.

3,772,735

MOUNTING PLATE FOR FURNITURE HINGE

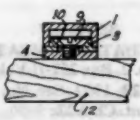
Horst Lautenschlaeger, Reinheim/Odenwald, Germany, assignor to Karl Lautenschlaeger Kommanditgesellschaft, Reinheim, Germany

Filed Aug. 26, 1971, Ser. No. 175,099

Claims priority, application Germany, Sept. 3, 1970, P 20 43 622.0

Int. Cl. E05d *7/04*

U.S. Cl. 16—129 6 Claims



Precise, simple and secure fastening of a hinge to a furniture carrier wall is made possible by a mounting means comprising a lower part adapted to be mounted directly on the carrier wall and an upper part adjustably connected to the lower part

by a first fastening means. The carrier wall arm of the hinge is securely mounted on the upper part by a second fastening means. When the carrier wall arm is in position attached to the upper part, the first and third fastening means are accessible so that adjustment of said hinge carrier arm may be effected without disturbing the lower part. While the upper part may be moved on the lower part within a plane generally parallel to the carrier wall and in a direction generally parallel to the direction of the pivotal axis, the carrier arm may be adjusted in a direction perpendicular to the direction of adjustment of the upper part on the lower part, and a further adjustment means is provided whereby the carrier wall arm is adjustable in a direction toward and away from the upper part so that adjustment in three dimensions is provided.

3,772,736

PIECE OF FURNITURE

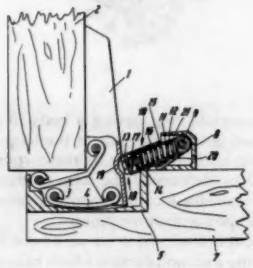
Anton Hettich, Herford-Schwarzenmoor; Udo Stellbrink, Stift-Quernheim, and Gunter Sundermeier, Bunde-Dunne, all of Germany, assignors to Kunststoff GmbH, Herford, Germany

Filed June 8, 1970, Ser. No. 57,412

Claims priority, application Germany, June 10, 1969, G 69 23 018.8

Int. Cl. E05f *1/12*

U.S. Cl. 16—163 **6 Claims**



A piece of furniture has a door or panel swingably mounted by means of a hinge. An elongated biased stud is mounted on a wall of the furniture piece pivotable in such manner that its free end engages the hinge and urges the door to closed position only during the initial increment of the door's movement to open position and the final increment of the door's movement to closed position.

3,772,737

MANUALLY ACTUATABLE MEAT TENDERIZER

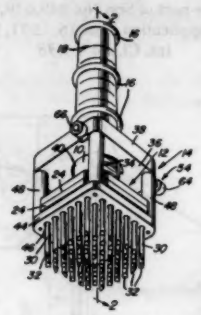
Victor P. Fleiss, Rte. No. 2, Box 257-H Valrico, Fla.

Filed Nov. 23, 1971, Ser. No. 201,339

Int. Cl. A22c *9/00*

U.S. Cl. 17—30 **3 Claims**

A manually grippable and actuatable portable type meat tenderizer characterized, generally stated, by two units. One unit constitutes a handling and tenderizing unit and is structurally designed to be held in and operated by one hand. The complemental unit is an adapter for the first-named unit. The first-named unit embodies a handle having a lower end provided with a pounding head equipped with meat penetrating and cutting elements or tines. The adapter unit has guide



means for the handle and head and, in addition, an apertured plate which functions as a stripper for the extensible and retractable tines.

3,772,738

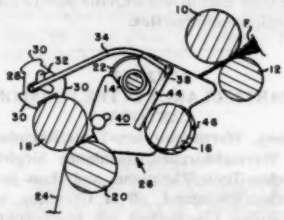
DRAFTING SYSTEM

Grady H. Sanders, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Division of Ser. No. 163,174, July 16, 1971, U.S. Patent No. 3,733,644, which in turn is a continuation-in-part of Ser. No. 857,767, Sept. 15, 1969, abandoned. This application Jan. 31, 1972, Ser. No. 222,393

Int. Cl. D01h *5/62*

U.S. Cl. 19—26 S **4 Claims**



An intermittently actuated scraper member for one of the front rolls of a drafting system to scrape lint from such roll to prevent the accumulation of lint, trash, etc., thereon, thereby eliminating the cause of lap ups on such roll.

3,772,739

WEB FORMING APPARATUS

Ernest G. Lovgren, Palos Park, Ill., assignor to Johnson & Johnson, New Brunswick, N.J.

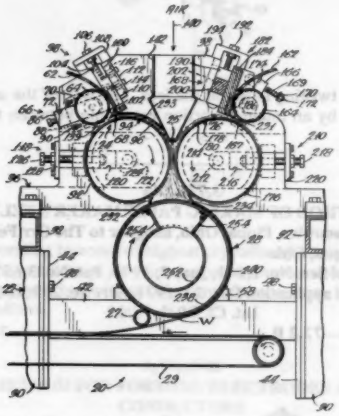
Filed Jan. 21, 1971, Ser. No. 108,547

Int. Cl. D01g *25/00*

U.S. Cl. 19—156.3 **8 Claims**

An apparatus for forming an air-laid non-woven web wherein a pair of parallel lickerins are positioned adjacent one another with the lickerins being rotated in opposite directions, so that when a first supply of fibrous material is fed to one lickerin and a second supply of fibrous material is fed to the other lickerin, separate supplies of individualized fibers are produced that are entrained in separate air streams impelled toward one another and toward a mixing zone between the lickerins. The individualized fibers are doffed from lickerins by the separate air streams and centrifugal force, and the

doffed fibers are given an initial trajectory, whereby the inertia of the fibers is sufficient to allow at least a portion of the fibers from each supply to become homogeneously blended as the air streams are impelled against one another. A suction actuated fiber condensing means is positioned in communication with the mixing zone, and the separate air streams are combined into a common air stream that directs the fibers through the mixing zone and toward the condensing means where the



fibers are deposited to produce a web comprised of randomly oriented fibers. When the material fed to the first lickerin includes relatively long fibers, such as textile length fibers, and the material fed to the second lickerin contains relatively short fibers, such as papermaking fibers, a web of randomly arranged fibers can be produced having a dispersion of different length fibers in more or less uniform intermixtures, to create a web having desired properties.

3,772,740

LANYARD CONSTRUCTION

Suren M. Seron, Joliet, Ill., assignor to Seron Mfg. Co., Joliet, Ill.

Filed Jan. 24, 1972, Ser. No. 220,117
Int. Cl. A44b *21/00*
U.S. Cl. 24—73 R **9 Claims**

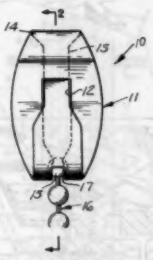
A clip for use in fabricating lanyards for holding whistles, stopwatches or the like. The clip is defined by a Y-shaped element preferably formed of resilient wire. The base of the Y has a portion configured in the shape of a hook to engage the stopwatch or whistle while the legs of the Y have inwardly directed ends which are adapted to be piercingly received in the walls of respective ends of resilient tubing such as plastic or the like.

3,772,741

CLIP

Ronald R. Rosalik, 4271 Oakshire, Berkley, Mich.

Filed Oct. 18, 1971, Ser. No. 190,242
Int. Cl. A44b *21/00*
U.S. Cl. 24—81 AB **1 Claim**



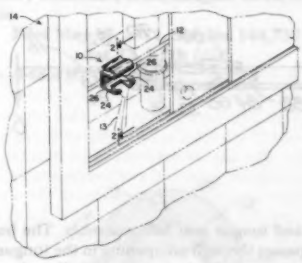
A clip device incorporating a ball type chain for clampingly engaging a diaper or the like to be supported in front of an infant. This device consists primarily of a formed plastic body including leg portions which will abutt with each other to springingly engage the cloth diaper or other material that will be supported by chain means from beneath the chin of an infant.

3,772,742

SHELF CLIP TO SUPPORT A RAZOR

Philip J. Gigante, 44 Robin Rd. Mahwah, N.J.

Continuation-in-part of Ser. No. 132,107, April 7, 1971, abandoned. This application July 9, 1971, Ser. No. 161,124
Int. Cl. A44b *21/00*
U.S. Cl. 24—84 B **10 Claims**



A one-piece clip to support and hold a razor has a spring acting, shelf-holding arm at its upper portion and has a bifurcated lower portion with upturned and inturned razor holding arms. The shelf holding means could be a suction cup mounted on the shelf holding arm.

3,772,743

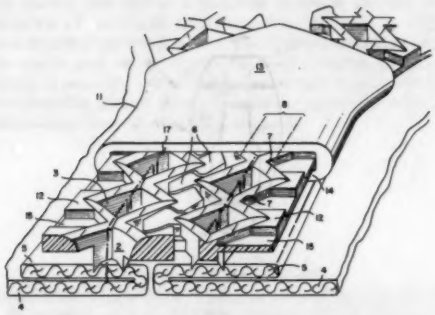
SLIDE-FASTENER STRINGER

Harry Hansen, Kopenhagen-Valby, Denmark, assignor to Opti-Halding AG, Glarus, Switzerland

Filed Sept. 27, 1971, Ser. No. 184,056
Claims priority, application Germany, Oct. 10, 1970, P 20 49 788.5
Int. Cl. A44b *19/14*, *19/04*
U.S. Cl. 24—205.1 R **8 Claims**

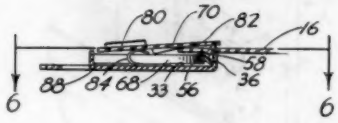
A synthetic-resin coupling element has a plurality of annular links which are longitudinally interconnected by webs of reduced cross-sectional area so that the element can flex at

these webs. Each link is square in outline with the diagonals all lying on the longitudinal axis of the fastener and each link carries a laterally and diagonally projecting coupling head. The top side of each element is formed with a longitudinally extending notch in which the stitches of the attachment tread lie.



The underside of each element is provided with pointed claw-like projections which engage the fabric to which the element is to be fastened and can even serve as welding spots for bonding of the element to the textile base. Such coupling elements can be sewn directly to the fabric with conventional sewing machines.

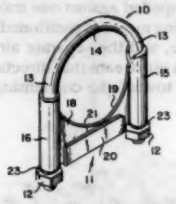
3,772,744
SEAT BELT BUCKLE
Robert W. Stoffel, 1714 W. Saratoga Ave., Ferndale, Mich.
Filed Feb. 15, 1972, Ser. No. 226,592
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 A **18 Claims**



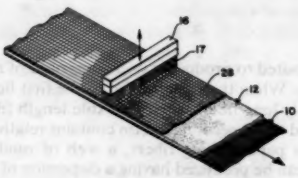
A buckle and tongue seat belt assembly. The buckle has a latch which passes through an opening in the tongue to engage a push-button actuated release member. To release the tongue, the user actuates the push button to permit the latch to move independently of the release member toward a release position. As the latch moves in its release motion, it biases the tongue toward removal from the buckle.

3,772,745
U-BOLT CLAMP ASSEMBLY
William E. Dowling, and William R. Heckethorn, both of Dyersburg, Tenn., assignors to Heckethorn Manufacturing Co., Dyersburg, Tenn.
Filed Aug. 31, 1972, Ser. No. 285,223
Int. Cl. B65d *63/00*
U.S. Cl. 24—277 **6 Claims**

A saddle for a U-bolt clamp is formed from a sheet metal blank rolled at its ends in opposite directions to provide tubular portions which receive the bolt legs in axially slidable relation. Under the clockwise torque transmitted to the ends of the tubular portions as the securing nuts are drawn up on the bolt legs against the saddle, the force exerted on both leg-encompassing tubular portions of the saddle will act to wind or constrict both tighter on the bolt legs or at least will prevent them from twisting loose on the legs. The web of the saddle is reinforced by an integral portion extending between the bolt legs.



3,772,746
METHOD OF MAKING PAPERMAKER'S FELT
Michael Ivanowicz, Piqua, Ohio, assignor to The Orr Felt Company, Piqua, Ohio
Division of Ser. No. 1,241, Jan. 7, 1970, Pat. No. 3,657,068. This application Dec. 23, 1971, Ser. No. 211,426
Int. Cl. D04h *18/00*
U.S. Cl. 28—72.2 R **3 Claims**

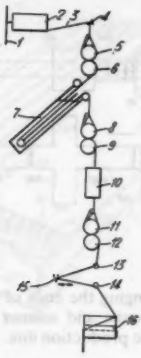


A papermaking felt has an essentially three-layer construction including a cushion of non-woven batting material interposed between a relatively fine woven finish fabric and a preferably coarser woven wear fabric, and these respective portions of the felt are anchored together by one or more needling operations. The finish fabric is fine enough weave to prevent undesirable marking of a sheet of paper, and the wear fabric is strong enough in construction to resist the abrasion and wear and open enough to permit water to pass freely through the felt. The intermediate batt is thick enough to resist compression occasioned by the high pressures of normal paper machine speeds and joins the finish and wear fabrics in unitary construction to prevent the fabrics from shifting relative to each other during operation.

3,772,747
PROCESS FOR PRODUCING TEXTURED YARN
Michel Buzano, Villeurbanne (Rhone), France, assignor to Rhone-Poulenc-Textile, S.A., Paris, France
Division of Ser. No. 814,465, March 17, 1969, Pat. No. 3,683,610. This application Oct. 26, 1970, Ser. No. 84,131
Int. Cl. D02j *1/22*
U.S. Cl. 28—72.17 **6 Claims**

Fancy yarns are made by subjecting yarns of a synthetic thermoplastic material, especially polyester yarns, to partial stretching, e.g. by a factor of 1.5 – 3.5, in contact with an aqueous lower alkanol or other crack-producing agent, followed by a heat relaxatior treatment, the said or other heat treatment, or a supplementary stretch, bieng applied intermittently or to a continuously varying degree. The yarns obtained have a flake appearance and comprise alternating thick and

thin portions, the diameters of the thick and thin portions both varying macroscopically, and the thick parts varying in diameter on the microscopic scale, the zones of smallett diameter



corresponding to zones of highest crystallinity and orientation. The thin parts may vary in diameter microscopically in an analogous way but with smaller variations, or may be substantially uniform.

3,772,748

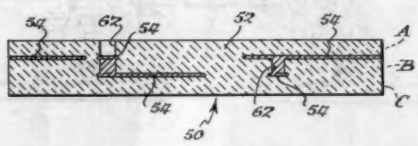
METHOD FOR FORMING ELECTRODES AND CONDUCTORS

Truman C. Rutt, Niagara Falls, N.Y., assignor to NL Industires, Inc., New York, N.Y.

Division of Ser. No. 134,689, April 16, 1971, Pat. No. 3,679,950. This application Jan. 24, 1972, Ser. No. 220,535

Int. Cl. H01g *13/00*

U.S. Cl. 29—25.42 **9 Claims**



A sintered ceramic article which comprises internal electrodes and/or conductors is formed by producing a sintered ceramic body that has areas of ceramic with interconnected pores extending to an outer face thereof and providing a conductor in said porous areas. The ceramic body may be formed by depositing, as by screen printing, on sheets of a powdered dielectric or insulating ceramic material bonded with a temporary bond, an area of a temporarily bonded powdered ceramic material which on firing becomes porous, consolidating a plurality of such sheets, and sintering them. Subsequently a conductive material may be provided in the porous areas by impregnating said areas with a conductive material or with a material which is reacted or decomposed to form a conductive material in said areas.

3,772,749

COMPOSITE WHEEL

Kaj Ragnar Loqvist, Fagersta, Sweden, assignor to Fagersta Bruks Aktiebolag, Fagersta, Sweden

Division of Ser. No. 8,833, Feb. 5, 1970, Pat. No. 3,673,677.

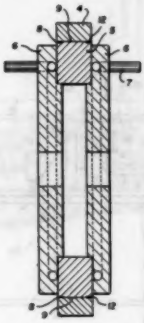
This application Mar. 31, 1972, Ser. No. 240,020

Claims priority, application Sweden, Feb. 14, 1969, 2059/69

Int. Cl. B21b *31/08*

U.S. Cl. 29—130 **3 Claims**

The invention provides a composite wheel having a hardened steel body rimmed with a hard metal carbide peripheral surface rim. The hard metal carbide peripheral surface is physically in contact with said steel body along the central portion of the periphery of said steel body. The hard metal carbide rim is brazed to said steel body by means of two joints. One of the brazed joints is between the hard metal carbide rim



and said steel body along one side of said periphery and the other said joints along the other side of said periphery. The two joints are separated by the central portion of said hard metal carbide rim which is physically in contact with said steel body.

3,772,750

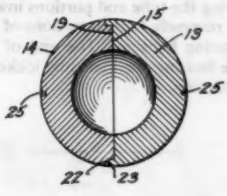
METHOD OF HOLLOW BALL FABRICATION

Daniel Hauser, Columbus, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed May 19, 1971, Ser. No. 144,757

Int. Cl. B21h *1/14*

U.S. Cl. 29—148.4 B **4 Claims**



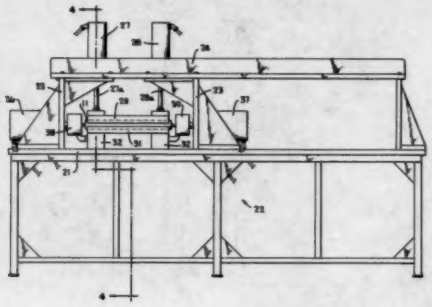
A method of manufacturing a hollow sperical object such as a hollow ball bearing wherein two hemispherical sections are united. The sections are formed with hollow centerpoints and with mating tongue and ledge configurations adjacent the outer periphery. Indents are placed at the apex of the hemispheres for alignment in a turning machine. The hemispheres are united at the tongue and ledge and are subjected to an electron beam for welding of the hemispheres to a hollow ball form. Thereafter, the periphery of the sphere is machined and in the preferred embodiment is machined a radial distance sufficient to eliminate the welded step at the junction of the tongue and ledge, as well as to eliminate the indents.

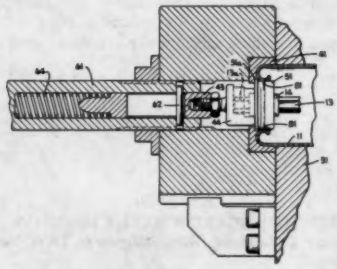
3,772,751

CONVEYOR ROLLER ASSEMBLY METHOD AND APPARATUS

William E. Lovett, Indianapolis, Ind., assignor to Economation, Inc., Indianapolis, Ind.

Filed Apr. 13, 1972, Ser. No. 243,756
Int. Cl. B23p *19/00, 11/00*
U.S. Cl. 29—148.4 D 7 Claims





Disclosed is a method and apparatus for clamping the conventional tube and shaft components of a conveyor roller in coaxial relation. The bearings are located on the shaft adjacent each end of the tube and inboard of the tube ends. Opposed forming dyes are then moved to contact the tube ends, folding or curving the tube end portions inwardly upon themseves with the reversely folded portions of the tube entering slightly the bearing housings. The end of the roller is thus formed and the bearings permanently locked to the tube in a single forming motion.

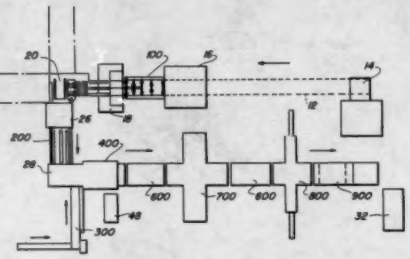
3,772,752

APPARATUS AND PROCESS FOR FORMING TUBULAR BODIES

Bernard J. Small, 8343 S. Winchester Ave., Chicago, Ill.

Division of Ser. No. 848,512, Aug. 8, 1969, Pat. No. 3,646,657.
This application Nov. 3, 1971, Ser. No. 195,162
Int. Cl. B23p *19/00*
U.S. Cl. 29—157 R 9 Claims

An apparatus and process for the automatic fabrication of tubular bodies from an inner core and a blank of outer wrap material to envelop the core which is stationarily secured within the wrap and bounded by a pair of end caps. The process and the apparatus for carrying out the process includes cutting means for dimensioning the blank, flanging means for forming opposed side flanges on the blank, wrapper-seamer means for wrapping with the blank a properly oriented inner core and seaming the flanged sides, second



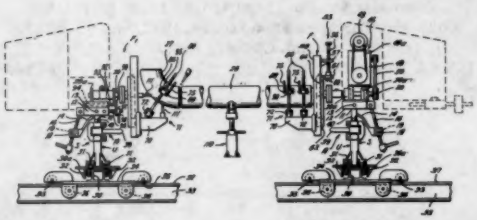
flanging means for flanging the ends of the tubular body and end cap mounting means and seamer means all of which operate in an automatic production line.

3,772,753

ARRANGEMENT FOR ALIGNING TUBULAR SECTIONS FOR FABRICATION

Eugene F. Sargeant, P.O. Box 267, Livingston, Tex.

Filed Feb. 9, 1972, Ser. No. 225,097
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P 6 Claims



A pair of upright structures in spaced relation to each other is provided with means for elevating and lowering each of the structures, means for pivoting the upper part of the structure so that it may be tilted upwardly or downwardly, and adjustable means are carried by the upper part of the structure for supporting a tubular section so that the tubular section carried by each of the upright structures may be aligned and connected together. At least one of the upright structures is provided with power means for rotating the supported tubular structure.

3,772,754

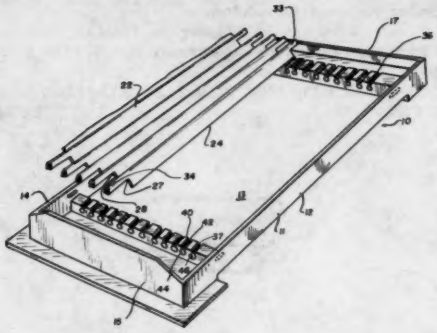
APPARATUS FOR SECURING A PLURALITY OF CARDS IN A HOLDER

Richard J. Stephens, 515 James St., Geneva, Ill.

Filed Mar. 17, 1972, Ser. No. 235,575
Int. Cl. B23p *19/00*; B23P *11/00*
U.S. Cl. 29—200 B 7 Claims

Apparatus for securing a plurality of cards into a holder includes a sheet of metal formed into an accordian-like shape with alternate peaks and troughs. Rod-like projections on opposite ends of the sheet are used in securing the same to indexing grooves in the card holding frame. Apparatus for loading the cards in the holder includes a crimping device which receives the frame and accordian-like sheet in locking engage-

ment. The crimping device has jaws which fit between adjacent troughs in the metal sheet and which are moved to



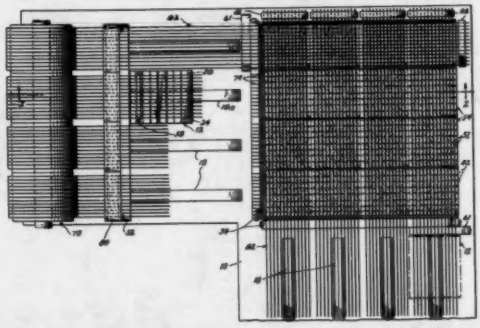
cause sections at the peaks of the sheet to break away, with the accordian-like folds being crimped to the card thereby forming separate hinges.

3,772,755

APPARATUS FOR WIRING CORE MEMORY CORES

Walter J. Draving, Willow Grove, and Robert C. Draving, Fort Washington, both of Pa., assignors to Micro-Miniature Parts Corporation, Willow Grove, Pa.

Division of Ser. No. 2,165, Jan. 12, 1970, Pat. No. 3,694,913.
This application June 14, 1972, Ser. No. 262,783
Int. Cl. H05k *13/04*; B23p *19/04*
U.S. Cl. 29—203 MM **6 Claims**



An apparatus for wiring the apertured cores of a core memory which includes placing the cores in a magnetic field and translating the wires through the apertures by means of magnetic needles.

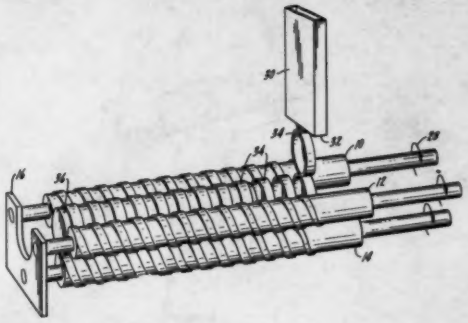
3,772,756

CORE HANDLING SYSTEM

Robert G. Vokes, Wilmette, and William A. Saarima, Park Ridge, both of Ill., assignors to Concep Machine Co., Inc., Skokie, Ill.

Filed Feb. 23, 1972, Ser. No. 228,557
Int. Cl. B23q *7/02*
U.S. Cl. 29—211 R **10 Claims**

A mechanism for locating and positioning cylindrical cores on a mandrel includes three spaced threaded rods driven in the same direction and having substantially identical threads. A chute is positioned above the space defined between the threaded rods, with the cores passing from the chute to a position in which the cores are supported on the threads. The



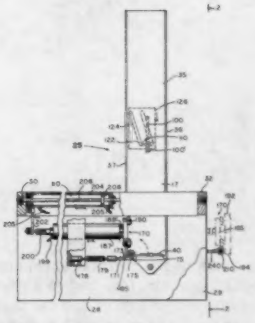
threaded rods, during rotation, carry the cores in spaced relation onto a mandrel which is positioned between the threaded rods. The cores are located and positioned in a precise spaced relationship on the mandrel by the rotating threaded rods.

3,772,757

MACHINE FOR AUTOMATICALLY ATTACHING HINGES TO DOORS AND JAMBS

Milton Goldstein, 465 Shore Rd., Long Beach, N.Y.

Filed June 26, 1972, Ser. No. 266,224
Int. Cl. B23q *7/10*; B27c *9/00*; B25b *23/00*
U.S. Cl. 29—211 D **11 Claims**



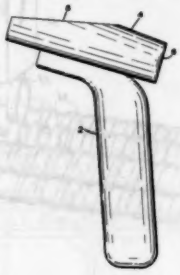
A machine for automatically installing hinges on a door and door jamb comprises a hopper for containing a stack of door hinges each having spaced screw holes, and a bin containing a multiplicity of screws with a screw dispenser which deposits screws into a hinge at a hinge receiving position. A rotatable lifter receives the hinge loaded with screws and applies it to a screwdriver assembly which moves to a hinge mounting position where the hinge is attached to a door and jamb.

3,772,758

INSTALLATION TOOL

Albert L. Smith, Lancaster, Pa., assignor to Armstrong Cork Company, Lancaster, Pa.

Filed Nov. 29, 1971, Ser. No. 202,835
Int. Cl. B23p *19/02*
U.S. Cl. 29—235 **6 Claims**



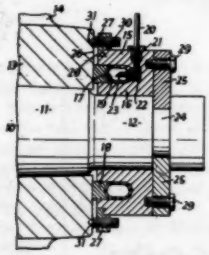
The tool is used to slip a flat flange-containing cover strip into two parallel facing grooves. The cover is passed through the tool which has a flared tubular body. The flat shape of the cover strip is converted into a curved configuration so that the flanges of the cover will slide into the parallel grooves.

3,772,759

FASTENING OF WHEELS, PROPELLERS AND THE LIKE

Thomas Walter Bunyan, London, England, assignor to P & O Pilgrim Valve Limited, London, England

Continuation of Ser. No. 820,878, May 1, 1961, abandoned.
This application June 28, 1971, Ser. No. 157,641
Int. Cl. B23p *19/04*
U.S. Cl. 29—252 **5 Claims**



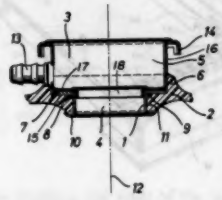
An assembly enabling the hub of a wheel,impeller, propeller or the like applied over the free end of a shaft, to be moved towards or away from that free end of the shaft, the assembly consisting of a shear member in the form of a removable divided ring mounted in an axially fixed position in an annular groove formed in a parallel cylindrical pintle at the free end of the shaft and a reaction pressure ring comprising a ring body of a size to be a sliding fit on the pintle and having an annular pressure chamber at one end containing a fitting annular piston movable by introduction of a pressure liquid into the pressure chamber, the reaction pressure ring being in contact with the shear member and engaged or connected with the adjacent end of the hub to be moved so that on introduction of pressure into the pressure chamber the distance of the hub from the stationary shear member is changed.

3,772,760

METHOD OF BINDING THE SYNTHETIC RESINOUS WALL OF AN OPENING TO A METAL INSERT

Rudolf Zlotek, Mutters b/Innsbruck, Austria, assignor to Willi Seeber, Kardaun (Bozen), Italy

Filed Nov. 5, 1971, Ser. No. 196,131
Claims priority, application Germany, Nov. 9, 1970, P 20 55 018.9
Int. Cl. B23p *17/00*; B23k *27/00*; B23p *11/00*
U.S. Cl. 29—400 **2 Claims**



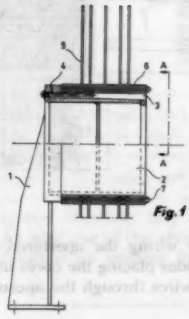
A method of connecting a thermoplastic synthetic resinous wall of an opening with a metal insert which involves placing the insert in the opening with one end thereof extending beyond the edge of the opening and bending the extended portion of the insert by a rolling or flanging operation to form a bead over the edge of the opening and to simultaneously develop sufficient frictional heat to fuse the resin and seal the insert to the wall around the opening.

3,772,761

METHOD AND MECHANISM FOR MOUNTING SAW BLADES IN A CIRCLE SAW

Arvo Ilmari Siltari, Karhula, Finland, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

Filed Feb. 11, 1972, Ser. No. 225,564
Claims priority, application Finland, Feb. 12, 1971, 408
Int. Cl. B23q *17/00*; B23p *19/00, 11/02*
U.S. Cl. 29—406 **9 Claims**

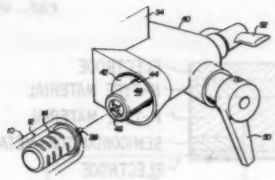


In a circle saw the shaft of which is adapted to receive several saw blades provided with center holes and arranged in a predetermined desired relationship to each other, the saw blades are in a first step assembled together with intermediate supporting rings in a separate premounting stand. In this premounting stand the blade assembly is centered and joined rigidly together by securing means, whereby a blade unit formed for mounting onto the saw hub. The blades are suitably prestressed after mounting on the hub, e.g. by expanding the hub radially.

3,772,762
METHOD OF SHORTENING A WINDOW SHADE ROLLER

Martin H. Stark, 1301 Wheeler, Saginaw, Mich.

Division of Ser. No. 885,065, Dec. 15, 1969, Pat. No. 3,722,573. This application Jan. 8, 1973, Ser. No. 321,620
Int. Cl. B23p 19/00
U.S. Cl. 29—426 5 Claims

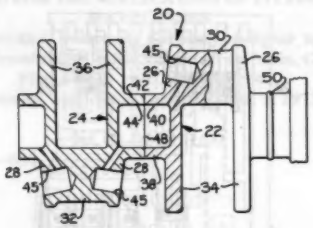


A method of reducing the length of a window shade roller assembly having a tubular roller, a shade convolutely wound thereon and an end plug, including inserting the end plug in a retracting mechanism, cutting the roller and reinserting the plug. The dimensions and configuration of the roller assembly enable it to be utilized in conjunction with a conventional window shade cutting machine and adjusted after assembly.

3,772,763
IMPROVED LIGHTWEIGHT CRANKSHAFT

Ralph B. Henson, Creve Coeur, and William G. Johnson, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Feb. 17, 1971, Ser. No. 116,113
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 6 Claims



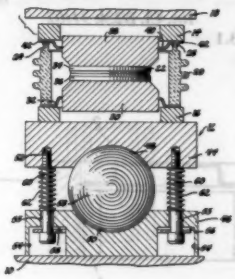
A lightweight crankshaft is manufactured by providing a plurality of initially completely discrete crankshaft segments, some of which are generally tubular, and joining complementary faces of the segments to each other by friction welding.

3,772,764
METHOD OF MAKING ENCLOSURE FOR A SEMICONDUCTOR DEVICE

Thomas J. Furnival, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 238,354, March 27, 1972, which is a division of Ser. No. 60,261, Aug. 3, 1970, Pat. No. 3,686,540. This application Apr. 6, 1963, Ser. No. 348,507
Int. Cl. B23k 31/02
U.S. Cl. 29—471.7 2 Claims

A hermetically sealed enclosure for a semiconductor device and a method and apparatus for making same is disclosed. A tubular ceramic housing is provided with an integral die on one end. A cold weldable layer is brazed on the integral die. A first cover member is brazed onto the other end providing a hermetic seal there. A second cover member is cold welded to the layer hermetically sealing the one end. The cold welding

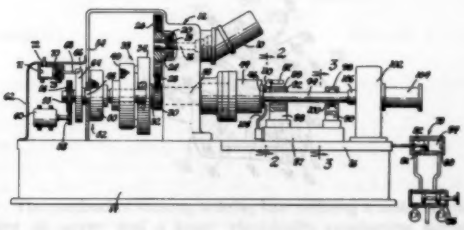


apparatus includes a pressure equalizing assembly having a pair of spaced resiliently coupled elements with facing hemispherical recesses. One of the elements slides on a bearing ball nested within the recesses to equalize the compressive forces of the cold welding around the end of the housing.

3,772,765
FRICTION WELDING METHOD

Edwin D. Ditto, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 29, 1971, Ser. No. 184,660
Int. Cl. B23k 27/00
U.S. Cl. 29—470.3 4 Claims



A flywheel driven through a one-way clutch by a motor can be selectively clutched to a drive spindle and connected chuck to relatively rotate workpieces which are moved into engagement under load. After expenditure of a portion of its stored energy, the rotating flywheel is released so that it can be readily accelerated by the motor under low load to a predetermined speed and energy level for another friction welding operation. The remaining stored energy in the rotating spindle and parts connected thereto is employed to complete the friction weld after flywheel release. A positioning device to facilitate loading of the workpieces into the chuck from a loader, an auxiliary brake to shorten friction weld times after flywheel release, and means for removing weld flash are disclosed.

3,772,766

PROCESS FOR THE PRODUCTION OF CERAMIC-METAL COMPOUND JOINTS

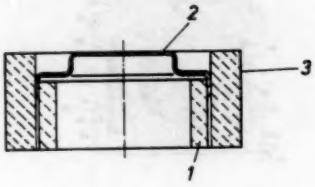
Volker Ebendt, Mannheim-Seckenheim, Germany, assignor to Deutsche Steinzeug-und Kunstsoffwarenfabrik, Mannheim, Germany

Filed Dec. 14, 1971, Ser. No. 207,844

Claims priority, application Germany, Dec. 16, 1970, P 20 61 879.5

Int. Cl. B23k *31/02*

U.S. Cl. 29—473.1 8 Claims



A process for brazing a metal element having a tubular skirt to the exterior of a ceramic tube utilizes an auxiliary ring of material having the same thermal expansion characteristics as the ceramic tube placed over the skirt of the metal element during brazing.

3,772,767

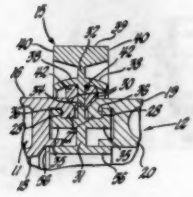
CASING JOINING

Douglas Johnson, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 858,698, Sept. 17, 1969, Pat. No. 3,655,223. This application Feb. 9, 1972, Ser. No. 224,900

Int. Cl. B21d *39/00*; B23p *11/02*

U.S. Cl. 29—507 3 Claims



A gas turbine engine casing is joined at circumferential split lines by coupling members formed as rings having flanges which interlock with flanges on the casing sections to hold them against separation and having flanges which are deformed to bear directly or indirectly against the outer surface of the casing to hold the first flanges in engagement. The coupling ring as provided includes a third flange which provides an abutment or reaction surface for a tool which deforms the second flange. A heat shield may be provided on the coupling ring. The flange on the ring or key against which the force reacts may be removed after the joint is completed. The same sort of joint may be provided at axial or other split lines. (Disclosure incorporated by reference to parent application Ser. No. 858,698 filed Sept. 17, 1969, now U.S. Pat. No. 3,655,223.)

3,772,768

METHOD OF PRODUCING A SOLAR CELL

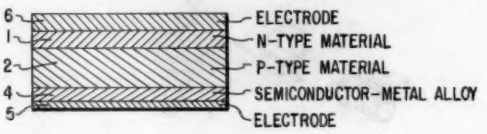
Horst Fischer, Heilbronn, and Willi Pschunder, Pleidelsheim, both of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Feb. 9, 1971, Ser. No. 114,040

Claims priority, application Germany, Feb. 13, 1970, P 20 06 589.8

Int. Cl. B01j *17/00*

U.S. Cl. 29—572 15 Claims



An improved method of producing a solar cell wherein a liquid metal-semiconductor phase is produced on a semiconductor body which has been previously provided with a p-n junction, the liquid metal-semiconductor phase is allowed to remain for a certain time before cooling it and then electrodes are attached to the semiconductor body.

3,772,769

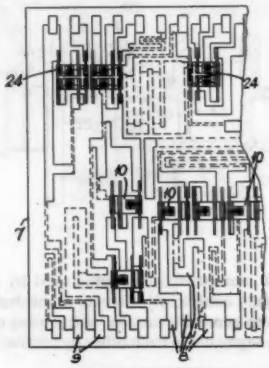
METHOD OF PREPARING AN ELECTRICAL COMPONENT FOR CONNECTION TO A MEMBER

Ronald William Rigby, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Continuation-in-part of Ser. No. 779,344, Nov. 27, 1968, abandoned. This application Nov. 1, 1971, Ser. No. 194,705

Int. Cl. B01j *17/00*

U.S. Cl. 29—574 4 Claims



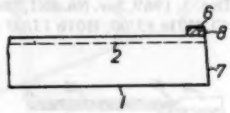
A method of preparing an electrical component for connection to a member having electrical conducting portions thereon comprising providing a carrier with separate metallic ink portions thereon, connecting the carrier by electrically conducting straps to a test tile on which circuit portions are formed, the straps forming electrical connecting elements, securing the electrical component to the carrier, making electrical connections between the component and the portions on the carrier, then testing the complete assembly, and then finally removing the carrier and its component from the test tile by cutting the straps and securing it, by the straps to electrical conducting portions on the said member.

3,772,770

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Heinz-Herbert Arndt, and Franz Belke, both of Heilbronn-Bockingen, Germany, assignors to Licentia, Patent Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Sept. 28, 1971, Ser. No. 184,426
Claims priority, application Germany, Oct. 2, 1970, P 20 48 451.9
Int. Cl. B01j 17/00
U.S. Cl. 29—583 6 Claims



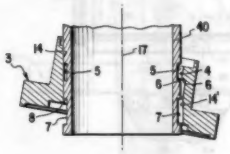
A method of manufacturing a semiconductor device, in particular a solar cell, in which after deposition of an electrode which approaches an edge of the semiconductor body on which it is deposited, the side surface next to that edge of the body is ground away to remove any electrode material which has been deposited thereon.

3,772,771

PROCESS FOR THE APPLICATION OF FITTINGS TO WAVEGUIDES

Erich Schuttloffel, Backnang, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed Feb. 2, 1970, Ser. No. 7,861
Claims priority, application Germany, Feb. 1, 1973, P 19 04 993.5
Int. Cl. H01p 11/00
U.S. Cl. 29—600 4 Claims



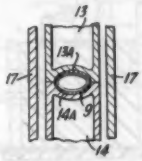
In order to allow the use of standard fittings with a hollow waveguide of noncircular inner perimeter and walls whose thickness varies along its cross section profile, the inner perimeter is widened or enlarged to a desired inner cross-sectional dimension for a distance of approximately one wavelength by inserting a preformed plug having the desired cross-sectional shape and dimensions.

3,772,772

COILABLE WAVEGUIDE

Gunther Lehnert, Hannover-Bothfeld, Germany, assignor to Hackethal Draht-Und Kabel-Werke Aktiengesellschaft, Hannover, Germany

Division of Ser. No. 478,905, Aug. 11, 1965, Pat. No. 3,383,895. This application Aug. 5, 1971, Ser. No. 169,478
Int. Cl. H01p 11/00; H01q 13/00
U.S. Cl. 29—600 2 Claims



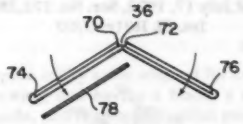
A coilable, corrugated waveguide having an elliptical cross section and a dielectric covering on the outer surface thereof; and a method of making the same.

3,772,773

ELECTRICAL COMPONENT AND METHOD OF MAKING THE SAME

Robert E. Hankey, Andalusia; Martin J. Arrizabalaga, Norristown; Edwin Olejkowski, Philadelphia, all of Pa.; Cyrill Pouch, Cherry Hill, N.J., and Charles H. Snyder, Philadelphia, Pa., assignors to Technitrol, Inc., Philadelphia, Pa.

Filed June 4, 1971, Ser. No. 149,923
Int. Cl. H01f 7/06
U.S. Cl. 29—602 18 Claims



The method of making a delay line utilizing a material having an upper and a lower electrically conducting surface separated by a dielectric layer comprising placing a plurality of delay line patterns on the upper and lower electrically conducting surfaces wherein each delay line pattern comprises at least two sections. The upper and lower electrically conducting surfaces are connected together through the dielectric layer at at least two points in each one of the delay line patterns. Portions of the upper and lower surfaces are removed to leave only electrically conducting surfaces in the shape of the plurality of delay line patterns on the dielectric layer. The material is then folded to align the sections of each pattern. Each pattern is then separated from the preceding and succeeding pattern to provide a plurality of individual delay line patterns. Connecting terminals are provided for each one of the delay line patterns to provide a plurality of delay lines.

The disclosure further includes the apparatus produced by said method.

3,772,774
METHOD OF MANUFACTURING MULTIPLE CONDUCTIVE LEAD-IN MEMBERS

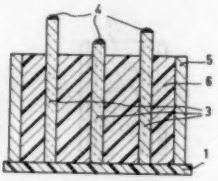
Wilhelmus Franciscus Knippenberg, and Gerrit Verspui, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 722,862, April 22, 1968, abandoned. This application July 6, 1970, Ser. No. 56,142

Claims priority, application Netherlands, Apr. 26, 1967, 6705847

Int. Cl. H01b *13/00, 3/00*

U.S. Cl. 29—624 **9 Claims**



A method of manufacturing a multiple lead-in sturcture in which spaced deposits of a solvent for the constituents of the lead-in members are provided on a substrate which is then heated to liquify those deposits and form molten droplets. Thereafter, the substrate is exposed to a vapor atmosphere containing the lead-in member constituents which are dissolved in the molten droplets and epitaxially deposit from the droplets onto the surface of the substrate. The latter step is continued until elongated crystals of the lead-in member constituents grow on the sites of the solvent deposits. Thereafter, an insulating material is provided between the elongated crystals. The substrate is then removed and the ends of the crystals provided with metal layers which serve as electrical contacts.

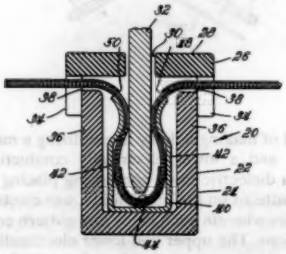
3,772,775
METHOD OF MAKING FLAT CONDUCTOR CABLE ASSEMBLIES

Hans R. Bonnke, Schaumburg, and Robert J. Melcher, Itasca, both of Ill., assignors to Methods Electronics Inc., Chicago, Ill.

Filed July 17, 1972, Ser. No. 272,384

Int. Cl. H01r *43/00*

U.S. Cl. 29—628 **2 Claims**



In the preferred embodiment, a plurality of flat conductors are arranged in spaced parallel relation and encased in a dielectric covering to form a flexible flat conductor cable. At selected intervals along the length of this cable, a pair of spaced abrasive wheels are moved in a direction normal to the cable's length for removing pairs of spaced strips of insulation from one side of the dielectric cover. An electrical connector is then mounted on the flat conductor cable at each of these selected intervals. This electrical conductor comprises an elongated housing having an elongated U-shaped spring contained therein, with the opposed faces of the arms of the U-shaped spring underlying an axial slot formed in the top of the elongated housing. The electrical connector is mounted on the cable by removing its top portion to expose the upper end of the elongated spring and pushing a loop of the cable between the arms of the U-shaped spring such that the spaced strips of exposed conductors coincide with the opposed faces of the loop. Finally, the top portion of the electrical connector is replaced.

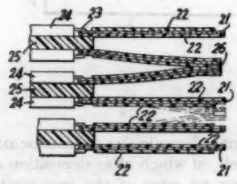
3,772,776
METHOD OF INTERCONNECTING MEMORY PLANE BOARDS

Lawrence P. Weisenburger, Ottsville, Pa., assignor to Thomas and Betts Corporation, Elizabeth, N.J.

Filed Dec. 3, 1969, Ser. No. 881,784

Int. Cl. H01r *43/00;* **H01b** *13/00*

U.S. Cl. 29—628 **3 Claims**



A method of interconnecting parallel circuit boards, including and principally for, memory planes, comprises bonding one end of a flat flexible cable to the edge of a first board, and connecting the word straps or other leads directly to the flat flexible cable. The other end of the flat connector cable is then directly connected to the end of a similar flat flexible conductor cable (connected at its opposite end to the word straps or other leads of a second board), thereby completing the interconnection.

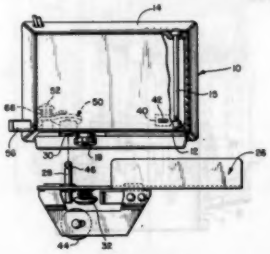
3,772,777
CAN OPENER WITH REMOVABLE CUTTER

William F. Trelc, Boonville, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed Aug. 2, 1971, Ser. No. 168,058

Int. Cl. B26b *7/38*

U.S. Cl. 30—4 R **2 Claims**



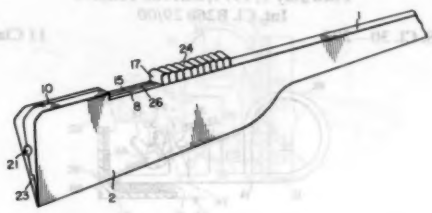
In a can opener having a rotatable drive wheel for supporting the underside of a can chime and having an opposing cutter adapted to be moved against the can top for opening same, mounting means for the cutter including a handle having a shaft thereon inserted through a frame socket for pivoting thereabout, a lever rotated on a pin about an axis parallel to the shaft and means cooperating between the lever pin and shaft for locking them together axially of the shaft, and arcuately disposed cam means cooperating between the frame and lever on opposite radial sides of the pin suitable for urging the lever axially of the frame socket for drawing the shaft snug.

3,772,778

INTERCHANGEABLE BLADE TYPE RAZOR

Takashi Ishida; Katsumi Yamada, both of Seki, and Shigeki Hasegawa, Mino, all of Japan, assignors to Feather Safety Razor Co., Ltd., Osaka, Japan

Filed July 27, 1972, Ser. No. 275,773
Claims priority, application Japan, Sept. 4, 1971, 46/79818
Int. Cl. B26b *21/10*
U.S. Cl. 30—53 7 Claims



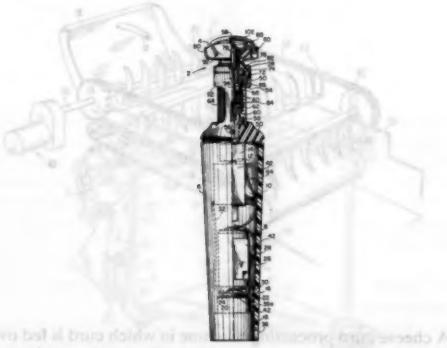
A blade interchangeable type razor comprises a body member and a cover member attached thereto, in which the cover is hinged to the body member at a groove provided lengthwise on the inner surfaces thereof. A tapered guide rail is formed between the cover and the body member, and a slider is provided therein so that the lower portion of the razor for holding a blade may be loosened and tightly closed by sliding the slider along the guide rail.

3,772,779

SAFETY RAZOR

Paul W. Douglass, Winchester, and Joseph E. Koehler, Norwell, both of Mass., assignors to The Gillette Company, Boston, Mass.

Division of Ser. No. 21,860, March 23, 1970, Pat. No. 3,648,368. This application July 19, 1971, Ser. No. 163,957
Int. Cl. B26b *21/38*
U.S. Cl. 30—45 2 Claims



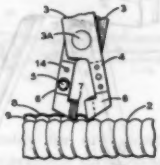
A safety razor including a head portion having guard means and a platform for supporting a razor blade. The razor further includes a handle portion connected to the head portion and having means disposed thereon for adjusting the position of the platform relative to the guard means, means proximate to the adjusting means for opening and closing the razor, and means for causing vibration of the head portion.

3,772,780

APPARATUS FOR CUTTING METAL SHEATH

Werner Bahre, Burgdorf, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Germany

Continuation-in-part of Ser. No. 725,370, April 30, 1968, abandoned. This application Mar. 2, 1971, Ser. No. 120,099
Int. Cl. B26b *13/06*; B23d *21/06*
U.S. Cl. 30—90.2 1 Claim



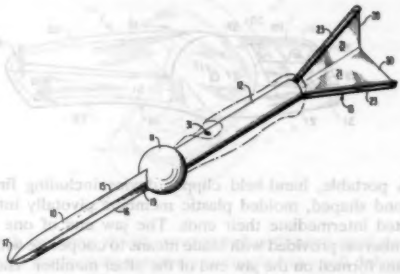
Apparatus for cutting corrugated metal cable sheath including shear means for severing individual corrugated portions transversely thereof and in longitudinal succession, while simultaneously displacing the opposed cut edges inwardly and then separating the cut edges to expose the cable core.

3,772,781

KNIFE

Joseph W. Newman, P.O. Box 5175, Mobile, Ala.

Filed June 25, 1971, Ser. No. 156,659
Int. Cl. B26b *11/00*
U.S. Cl. 30—123 21 Claims



A multi-purpose utility knife adapted for cutting, thrusting, chopping, throwing, and having a blade, a weighted impact member, a handle, and flight stabilization means. The impact member is a metal sphere interposed between the blade and the handle and comprises a substantial portion of the total weight of the knife to provide a shock force which must be absorbed by the target. The impact member also functions as a blade guard and as a means for gripping the knife for throwing. The flight stabilization means insures that the leading edge of the knife hits the target when the knife is thrown, and consists of a plurality of fins that are normally stored in the handle and which can be extended therefrom when the knife is thrown.

3,772,782

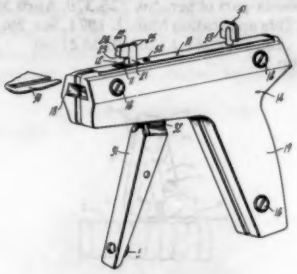
NIBBLING TOOL

Guilbert M. Hunt, Brecksville, Ohio, assignor to The Stanley Works, New Britain, Conn.

Filed Feb. 16, 1972, Ser. No. 226,682
Int. Cl. B23d *27/02*
U.S. Cl. 30—249 9 Claims

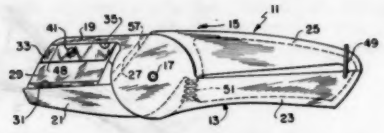
A hand-operated nibbling tool for use with sheet material is provided with an elongated frame and with a pistol-type hand grip at its rear end and a downwardly depending trigger-like

operating lever forwardly of the hand grip. The operating lever has camming engagement with an elongated punch lever pivoted at one end on the frame adjacent the hand grip and having a punch at its other end which, in cooperation with a



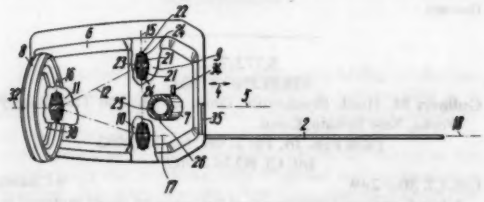
die formed in the frame adjacent its forward end, operates to shear consecutive small rectangular pieces from the sheet material. The location of the pivots and the shape of the camming surface are such as to provide ease of operation and also a varying operating speed, if desired.

3,772,783
HAND CLIPPER
Marnie C. Averitt, 107 Westdale Ct., Timonium, Md.
Filed Mar. 28, 1972, Ser. No. 238,913
Int. Cl. B26b *17/04*
U.S. Cl. 30—186 **4 Claims**



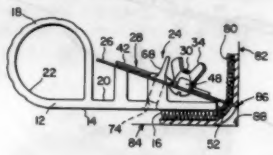
A portable, hand-held clipper device including first and second shaped, molded plastic members pivotally interconnected intermediate their ends. The jaw end of one of the members is provided with blade means to cooperate with anvil means formed on the jaw end of the other member. The other ends of both members form handles for manipulation of the device.

3,772,784
HOLDING ARRANGEMENT FOR MOTOR SAWS
Richard Heermann, Hebsack, Germany, assignor to Andreas Stihl Maschinenfabrik, Neustadt near Waiblingen, Germany
Filed Oct. 14, 1970, Ser. No. 80,578
Claims priority, application Germany, Oct. 16, 1969, P 19 52 066.2
Int. Cl. B27b *17/02*
U.S. Cl. 30—382 **15 Claims**



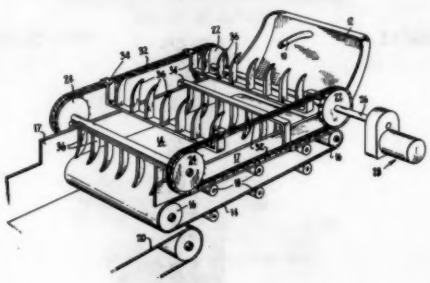
A holding arrangement for a motor operated chain saw which includes a handle near the front end of the motor housing and a support for engaging the lower arm near the rear end of the motor housing. The support may be ring-like or yoke-like and the support and handle are carried by a member which is connected to the motor housing by resilient vibration damping elements.

3,772,785
COMBINATION TRIMMING AND CUTTING TOOL
William Arthur Fischer, Greenville, S.C., assignor to Commercial Affiliates Inc., New York, N.Y.
Filed July 1, 1971, Ser. No. 158,679
Int. Cl. B26b *29/00*
U.S. Cl. 30—293 **11 Claims**



A convertible edge trimming and cutting tool with a body portion including a base plate having surface bearing means and edge guide means to guide the edge trimming operation of the tool, and a blade holding plate movable with relation to the base plate, so that a cutting blade attached to the blade holding plate may be extended beyond the guiding edge of the base plate to perform a cutting operation without the aid of the base plate guide.

3,772,786
APPARATUS FOR USE IN PROCESSING CURD IN THE MANUFACTURE OF CHEESE
Wilbur Valentine Leonard, Brighton, Victoria, Australia, assignor to Bell Bryant Pty. Ltd., Kensington, Victoria, Australia
Filed July 23, 1971, Ser. No. 165,687
Claims priority, application Australia, July 23, 1970, 1958/70
Int. Cl. A01j *25/11*
U.S. Cl. 99—456 **5 Claims**



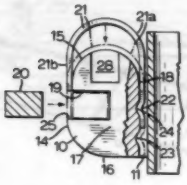
A cheese curd processing machine in which curd is fed over a screen to a first conveyor on which it forms a layer, the conveyor being operated in use at a speed so as to form a layer of curd of convenient depth for whey drainage purposes, and the layer being stirred by means of a series of rakes which are moved in succession along its length from the infeed to the outfeed end thereof at a speed greater than the speed of the conveyor. Curd from the layer may then be transferred to a second conveyor, the effective speed of which is less than the speed of the first conveyor so that the depth of curd on the second conveyor is greater to facilitate consolidation during the second conveying stage.

3,772,787

ORTHODONTIC BRACKET

Gustaf H. Hanson, 33 Woodside Dr., Hamilton, Ontario, Canada

Filed Mar. 17, 1972, Ser. No. 235,769
Int. Cl. A61c 7/00
U.S. Cl. 32—14 A 14 Claims



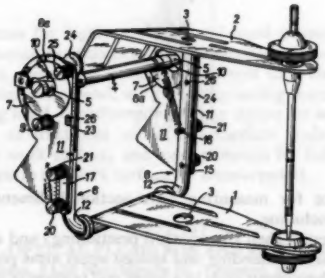
New orthodontic brackets each comprise a body slotted for the reception of an arch wire and a retainer member for retaining the arch wire in the slot; the retainer member is preferably of flat metal conforming to the shape of the body and is movable between two positions in which the slot labial opening is respectively open and closed; means are provided for positively retaining the member in the said positions.

3,772,788

ARTICULATOR FOR CONSTRUCTING ARTIFICIAL TEETH

Albert Gerber, Bellariastrasse 48, Zurich, Switzerland

Filed Oct. 21, 1971, Ser. No. 191,193
Int. Cl. A61c 11/00
U.S. Cl. 32—32 3 Claims



An articulator for the construction of artificial teeth or dentures which is of the type embodying a fixed base plate, a movable base plate, and a pair of support means for interconnecting such base plates with one another. Each support means can be individually adjusted in length.

3,772,789

ORTHODONTIC TENSIONING ASSEMBLY

Irvin S. De Weoskin, assignor to Orthoband Company, Inc., both of St. Louis, Mo.

Continuation-in-part of Ser. No. 854,869, Sept. 3, 1969, abandoned. This application July 20, 1971, Ser. No. 164,250
Int. Cl. A61c 7/00
U.S. Cl. 32—14 D 5 Claims

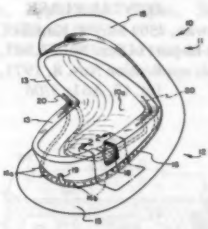
A tensioning assembly for orthodontic instrumentalities comprising a coil compression spring housed in a tube and a tensioning member, e.g., a hook, adapted to compress the spring to apply traction to the teeth via an orthodontic instrumentality such as a face bow.

3,772,790

TOOTH ISOLATING SHIELD

Clifford S. Swan-Gett, 4527 S. 2995 East, Salt Lake City, Utah; Richard R. Despain, 2439 Campus Dr., Salt Lake City, Utah, and Stephen C. Jacobsen, 12 Burton St., Arlington, Mass.

Filed Aug. 9, 1971, Ser. No. 170,233
Int. Cl. A61c 5/12
U.S. Cl. 32—34 11 Claims



A tooth isolating shield constructed with semi-rigid dentition bridge conforming members connected to a soft deformable apron of material. A cushion deformable material is within the dentition conforming members and can be molded or fitted to conform closely to a dental patient's upper and lower teeth. The dentition conforming members, apron and cushion material can be sectionally cut away to provide access through which a dentist can work on a selected tooth or teeth. The shield then isolates the tooth or teeth being worked on, keeping the area worked on dry, uncontaminated and effectively exposed. It also effectively protects mouth tissue and other teeth from injury and contamination during the dental procedure. A fitting is provided for connection to an aspirator and the fitting connects to intake ports located to collect moisture and some solids accumulating on or under the sheet material.

3,772,791

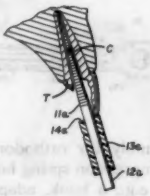
ENDODONTIC OPERATING SYSTEM

Oscar Malmin, 127 E. Wayne Ave., Akron, Ohio

Filed July 26, 1971, Ser. No. 165,923
Int. Cl. A61c 5/02
U.S. Cl. 32—57 3 Claims

An endodontic operating system which includes a measurement instrument and a sleeve adapted to be secured thereto; a working instrument and a measurement sleeve adapted to be secured thereto; a multi-purpose forceps or pliers; means for attaching the measurement sleeve to the working tool in

predetermined relationship therewith and an assembly holder for holding the components of the system. The measurement instrument and sleeve thereof enable the instrument to be inserted into the root canal of a tooth with the sleeve secured thereto whereby by means of X-ray a predetermined depth relationship can be determined. The working instrument and the measurement sleeve associated therewith of a new design and a further application to existing instruments enable that sleeve to be placed on the working instrument in such a



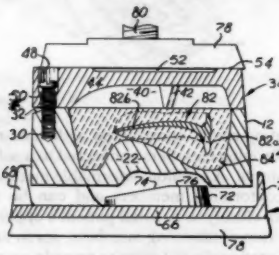
fashion that the working instrument enters the tooth to the predetermined depth determined by the measurement instrument which further may serve as an operating handle for the working instrument. Securing of the sleeves to both the measuring and working instruments is accomplished by the multipliers or forceps. The assembly holder provides a place for storing these components as well as for means for securing the measurement sleeve to the working instrument in its predetermined relationship.

3,772,792

DENTAL FLASK

George F. McGowan, 4509 Forest, Kansas City, Mo.

Continuation-in-part of Ser. No. 31,947, April 27, 1970, abandoned. This application Nov. 8, 1971, Ser. No. 196,632
Int. Cl. A61c *3/06*
U.S. Cl. 32—59 17 Claims



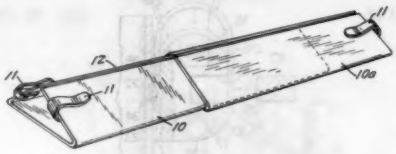
The closure section of a two-section dental flask, used in the manufacture of dentures, fulcrums to a limited, adjustable extent about a bevel on the wall of the primary section of the flask during curing of polymeric material in the base of a denture contained within the flask. By establishing the fulcrum point behind the molar tooth region of the denture, expansion of polymeric material in the molar region may be greatly restricted, while the anterior tooth region, having less material than the molar region, is essentially free to expand and contract normally under pressure of a spring action compress. Connector pins for the sections of the flask fit into double-diameter holes to facilitate rocking and fulcruming of the closure section while preventing twisting thereof, and a rim on the outside of the closure section receives and transmits pressure from the compress directly to the pyramidal sidewall of the primary section. Special breakers and a pad on the inside of the closure section cooperate to safely dislodge the finished denture from solidified investment material in the primary section when the solidified material is ejected from the primary section.

3,772,793

HEAVY FABRIC CUTTING TOOL GUIDE

Lloyd E. Anderson, 3123 Upton Ave. North Minneapolis, Minn.; Donlin Thompson, 8332-11th Ave. South Minneapolis, Minn. and Gilbert L. Alinder, 4312 Shoreview Ave. South Minneapolis, Minn.

Continuation of Ser. No. 35,508, May 7, 1970, abandoned. This application Oct. 7, 1971, Ser. No. 187,528
Int. Cl. B43l *7/00*; D06h *7/00*
U.S. Cl. 33—174 G 5 Claims



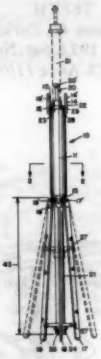
A readily portable heavy fabric cutting tool guide is provided to aid in the cutting of heavy fabric such as rugs. The guide utilizes a substantially rigid unitary elongated tube-like member having a slot opening along the longitudinal axis thereof. Stabilizing means are provided to hold the slot in an upright position during usage. In a preferred form, two or more members are utilized which telescope into one another to provide a guide of adjustable length.

3,772,794

BOREHOLE MEASURING DEVICE

Robert D. Hopler, Jr., Succasunna, N.J., assignor to Hercules Incorporated, Wilmington, Del.

Filed Dec. 22, 1971, Ser. No. 210,860
Int. Cl. E21b *47/08*; G01b *5/12*
U.S. Cl. 33—178 F 8 Claims



A device for measuring cross-sectional dimension of a borehole including

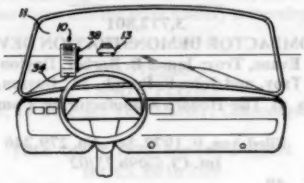
an elongated shell (for upward positioning) and a plurality of downwardly extending and spaced-apart arms pivotally attached at their upper ends to a lower end portion of the shell; a shaft extending longitudinally through the shell, and a solid member, generally disc-like, attached to the bottom end of the shaft within the confines of the arms to cause the arms to pivotally ride along the periphery thereof when the shaft is raised; a cable attached to an upper end of the shaft for raising it, and associated elements for measuring the longitudinal travel of the cable (when taut) as an index of pivotal travel of the arms, the latter being a measure of the borehole dimension at that level.

3,772,795

RANGE, TRAILING DISTANCE AND SAFE PASSING INDICATOR FOR MOTOR VEHICLE OPERATORS

Albert M. Calvet, 1864 N. Michigan Ave., Pasadena, Calif.

Filed May 28, 1971, Ser. No. 147,782
Int. Cl. G01c 21/00
U.S. Cl. 33—264 7 Claims



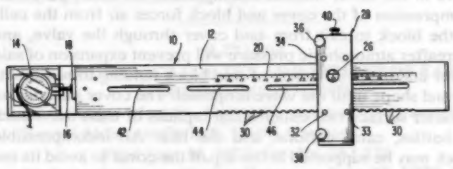
A transparent strip has two vertically spaced reference marks inscribed thereon. The strip is attached to the windshield and by properly orienting his head, a driver aligns the image of a leading vehicle on a scale that is inscribed between the reference marks. The scale informs the driver of the distance between his vehicle and that of the leading vehicle. The strip may be positioned elsewhere on the vehicle to measure the distance of a trailing vehicle.

3,772,796

APPARATUS FOR LINEAR MEASUREMENT OF SHEETS

William T. Saunders, assignor to National Steel Corp., Pittsburgh, Pa.

Filed Feb. 12, 1971, Ser. No. 114,967
Int. Cl. G01b 5/06
U.S. Cl. 33—147 E 11 Claims



Apparatus for highly accurate and rapid measurement of linear dimensions of sheet material including a support surface for sheets, means for accurate alignment of a sheet with a slidable measuring head, self centering seating features for the measuring head, coordinated dial gage means for accurate indications of fractional values intermediate scale markings along the work surface, and magnet means for holding magnetic sheets to the work surface for measurement.

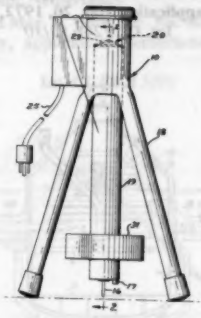
3,772,797

OPTICAL PLUMB BOB AND METHOD

Joseph Gleba, 5128 Hutchinson St., Chicago, Ill.

Filed May 30, 1972, Ser. No. 257,619
Int. Cl. G01c 15/00
U.S. Cl. 33—227 7 Claims

An optical plumb bob having a base, an optical ray tube gimbaled together on the base and having lenses, light and a cross hair scope therein to project a cross hair image on the ceiling, the bottom of the tube being equipped with a movable magnetically attached floor pointer and a removable magnetically attached weight so that after the cross hair image is focused on a ceiling point, the bob can be calibrated by shifting the pointer or weight or both so as to direct the pointer at a floor point vertically below the ceiling point whereby the bob



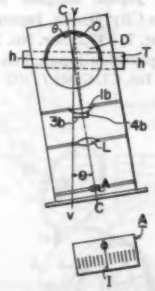
is calibrated for locating other ceiling points (as for hangars) which are vertically above pre-selected floor points.

3,772,798

SUSPENSION TYPE LEVELLING DEVICE

Hiromitsu Kijima, Urawa, Japan, assignor to Tokyo Kogaku Kikai K.K., Tokyo, Japan

Filed Sept. 15, 1971, Ser. No. 180,718
Claims priority, application Japan, Sept. 22, 1970, 45/83078; Nov. 9, 1970, 45/98556
Int. Cl. G01c 9/12, 9/14
U.S. Cl. 33—348 5 Claims



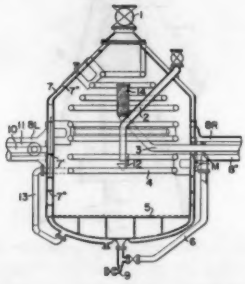
A suspension type levelling device comprising a fixed member provided with a convex or concave bottom surface and a suspended member provided with a concave or convex top surface complementary to the bottom surface of the fixed member having substantially the same curvature. A thin liquid film is interposed therebetween so as to produce an attractive force between the both members. The suspended member maintains a position representing the true level or, in other words, the line connecting the center or axis of curvature of the top surface of the suspended member and its center of gravity remains in a vertical position independent of an inclined position of the fixed member. The vertical position can be obtained by suitably the surface tension of the liquid, viscosity of the liquid, weight of the suspended member, the contacting surface, the thickness of the liquid film and the radius of curvature.

3,772,799

APPARATUS FOR TREATING A MIXTURE

Yoshio Yoshikawa; Hiroshi Kondo; Akitoshi Sugio, and Tomotake Kato, all of Tokyo, Japan, assignors to Mitsubishi Edogawa Kogaku Kabushiki, Tokyo, Japan

Division of Ser. No. 851,396, Aug. 19, 1969, Pat. No. 3,664,035. This application Mar. 20, 1972, Ser. No. 236,526
Int. Cl. F26b *13/30*
U.S. Cl. 34—92 **6 Claims**



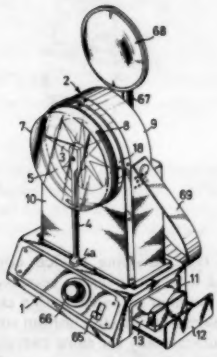
The apparatus of this invention is suitable for treating a labile material in a state free from deteriorating factors. Filtration, washing, drying and mixing operations can be effected in this single apparatus. The apparatus comprises a vessel, a filter plate, cylindrical rotating shafts, and a suction member provided inside said vessel to be stationary while the vessel rotates and to be located at a site where contact of said suction member and the solid contents of the vessel during rotation thereof is minimal.

3,772,800

APPARATUS FOR PRACTICING TIMING FOR SPORTS TO BE USED MAINLY FOR GOLF

Koichi Seze, Tokyo, Japan, assignor to Daiwa Seiko Co., Ltd., Higashi-Osaka City, Osaka, Japan, a part interest

Filed Apr. 7, 1972, Ser. No. 242,008
Claims priority, application Japan, Feb. 21, 1972, 47/18202
Int. Cl. G04f *11/02*
U.S. Cl. 35—29 A **25 Claims**



An apparatus for practicing timing includes a pointer to be rotated at a constant tempo in one direction and to be watched by the exerciser and an indicating member to be registered with the pointer at a predetermined position to be thereafter rotated in registry with the pointer. Upon reaching a predetermined position the indicating member is moved in a direction opposite to the direction of movement of the pointer at a higher speed than the pointer and returns to the previously registered position.

The exerciser prepares for the timing practice by the movement of the pointer and swings his club in unison with the movement of the indicating member for timing practice.

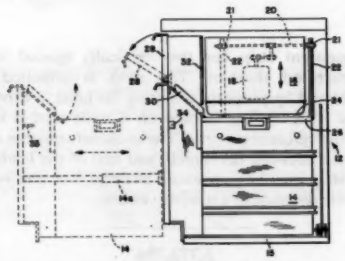
To assure more effective timing practice, auditory practice means is also disclosed in combination with visual practice means. The apparatus further includes means for providing profile of an actual swing form and means for minute adjustment of the swing tempo. Thus, swing form can be corrected along with practicing timing for swinging the golf club.

3,772,801

COMPACTOR DEMONSTRATION DEVICE

Charles R. Evans, Troy; James B. Barber, Dayton; Ernst Grunewald, Troy, and John F. Pernik, Jr., Dayton, all of Ohio, assignors to The Hobart Manufacturing Company, Troy, Ohio

Filed Aug. 9, 1972, Ser. No. 279,246
Int. Cl. G09b *25/02*
U.S. Cl. 35—49 **7 Claims**



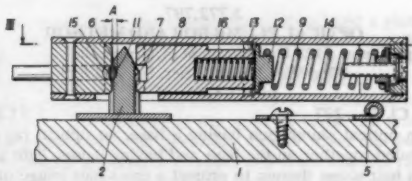
For use with trash compacting apparatus in repeated demonstrations thereof an air-tight flexible cover constructed to assume the shape of the compactor receptacle in an expanded condition, a cellular compressible block of material inside the cover is normally erect with air contained in its cells to urge the cover to its expanded condition, and a one-way valve in the cover inhibits the ingress of air into said cover. Compression of the cover and block forces air from the cells of the block to exit from said cover through the valve, and thereafter atmospheric pressure will prevent expansion of said cover under the influence of said block tending to resume its normal shape until the valve is opened. The cover includes on its outer surface two dimensional replicas of trash items such as bottles, cans, cartons, and the like. An incompressible block may be supported in the top of the cover to avoid its entanglement with the face of the compactor ram.

3,772,802

SKI BOOT

Thomas Gordon Smolka, Wien-Mauer, and Gottfried Schweizer, Wien, both of Austria, assignors to Gertsch AG Zug, Switzerland

Filed June 23, 1972, Ser. No. 265,436
Claims priority, application Austria, July 16, 1971, 6186/71
Int. Cl. A63c *9/00*; **A43b**
U.S. Cl. 36—2.5 AL **12 Claims**



Release device for reception into the sole of a ski boot. An engaging unit is provided for location in the sole of a ski boot and same cooperates with upstanding means fixedly related to

the upper surface of a ski. When the ski boot is parallel with the longitudinal axis of the ski, the holder operates in a normal manner to resist forces tending to urge the ski boot directly upwardly. However, when the ski boot is partially turned with respect to the center line of the ski, then the latching mechanism is moved partway toward its release position and a less total force is required to effect the safety release. Thus, in a twisting or diagonal fall, when the bone of the skier is subjected to both bending and torsional forces, the release takes place at lesser force and the skier's safety is thereby enhanced.

3,772,803

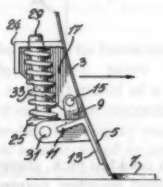
SNOW PLOW

Lucien Cote, 19 Cote St., Ville Mercer, Chateauguay, Quebec, Canada

Filed Apr. 3, 1972, Ser. No. 240,554

Int. Cl. E01h *5/04*

U.S. Cl. 37—42 VL **1 Claim**



Snow-plow comprising a plow blade to be installed in front of a motor vehicle for the shovelling of snow laterally with respect to the direction of displacement of the vehicle and a scraping bar in the form of a rigid strip provided along the lower edge of the afore-mentioned plow blade so as to contact in scraping position, the surface to be cleared of snow. The scraping bar is so mounted on the plow blade that it can swing back when meeting an obstacle and can return to its original scraping position under spring pressure.

3,772,804

LEVELING DEVICE FOR THE ADJUSTMENT OF EARTH WORKING IMPLEMENTS

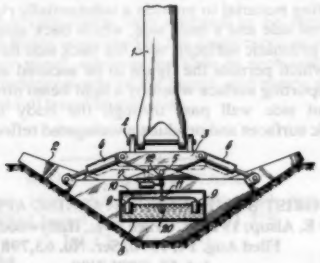
Josef Bomeke, Meppen, Germany, assignor to Orenstein & Koppel Aktiengesellschaft, Berlin, Germany

Filed June 15, 1971, Ser. No. 153,225

Claims priority, application Germany, June 18, 1970, P 20 29 882.2

Int. Cl. E02f *5/14*

U.S. Cl. 37—103 **1 Claim**



A ground working machine having a ground working tool especially for ditching and tiltably supported on the ground working machine. This tool itself carries a level detecting device operable for maintaining the tool in a predetermined position relative to the vertical at all times.

3,772,805

METHOD AND SUCTION DREDGING INSTALLATION FOR CONVEYING DREDGING SPOIL

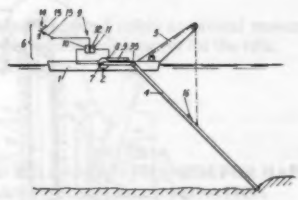
Jan De Koning, Soetendaal, Netherlands, assignor to N.V. Ingenieurs-bureau voor Systemen en Octrooien "Spanstaal," Rotterdam, Netherlands

Filed Mar. 3, 1969, Ser. No. 803,915

Claims priority, application Netherlands, Mar. 6, 1968, 6803191

Int. Cl. E02f *3/90*

U.S. Cl. 37—58 **12 Claims**



The pressure difference across the pump of a suction dredging installation and/or the rate of change of this pressure difference are determined. The suction pipe is connected to the pump for withdrawing a suspension of the dredged material and the dredging operation is controlled in accord with the pressure difference related values determined to maintain the pump working at optimum conditions.

3,772,806

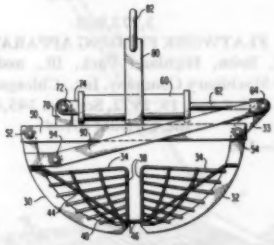
OYSTER TONGS

J. Thomas Meadows, 74 Bowman Dr., Salisbury, Md.

Filed Mar. 16, 1972, Ser. No. 235,226

Int. Cl. E02f *5/00*

U.S. Cl. 37—119 **7 Claims**



Tongs for harvesting oysters including two grated baskets pivoted to a support frame in opposed relation for actuation between open and closed positions by a hydraulic motor mounted on the support frame to directly drive one basket which in turn is connected to the other basket by a linkage for driving the latter in unison. The tongs are raised and lowered in water from a boat by a cable driven by a hydraulically operated switch. Operation and control of the tongs and the winch is achieved through a hydraulic system including foot pedals which actuate control valves for supplying and exhausting hydraulic fluid to and from the motors associated with the tongs and the winch.

3,772,807

EXCAVATOR FOR GRAVES AND THE LIKE

Bryce F. Van Valkenburgh, 1416 Bunker Rd., Flossmoor, Ill.

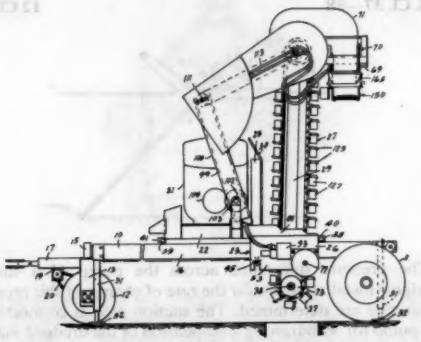
Filed Sept. 27, 1971, Ser. No. 184,063

Int. Cl. E02f *3/08*

U.S. Cl. 37—192 R **4 Claims**

Excavator forming uniform rectangular openings in the ground suitable for use as grave openings. A wheel mounted

open frame forms the support for a carriage movable along the frame. The carriage forms a guide and mounting for a vertically extending bucket frame, guiding digger buckets in an endless path about the frame and positively sumping the digger buckets downwardly into the ground and elevating the digger buckets with respect to the ground at the termination of an excavating operation. The carriage supports and guides the bucket frame for vertical movement at a slight angle relative to the ground, advancing the lower end of the bucket frame in



the direction of travel of the carriage. A positive rack and pinion type of drive sumps the bucket frame into the ground and holds the frame in position, as advanced to form an elongated excavation. An independently driven positive rack and pinion type of drive feeds the carriage and bucket frame along the main frame. The machine has a versatile discharge conveyor system, placing the diggings in selected positions along the side of the excavation, and retractable when moving the machine from place to place.

3,772,808

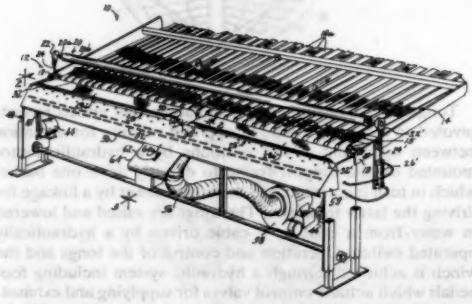
FLATWORK FEEDING APPARATUS

Sheldon P. Behn, Highland Park, Ill., assignor to Super Laundry Machinery Company, Inc., Chicago, Ill.

Filed Apr. 19, 1972, Ser. No. 245,485

Int. Cl. D06f 67/04

U.S. Cl. 38—143 **12 Claims**



Friction belt means movable from a feeding station is combined with nip roller means mounted for movement between an initial position spaced appreciably above the friction belt means and a lowered position where the nip roller means presses the front end portion of a flatwork piece placed upon the friction belt means. A pair of initially stationary opposite laterally outwardly movable flatwork piece smoothing means are positioned immediately behind the inlet end of the friction belt means. Flatwork piece position sensing means is located behind the friction belt means at the feeding station so as to sense the presence of a dropped portion of a flatwork piece whose front end is positioned on the friction belt means. When the flatwork piece is dropped by the persons who initially placed the front end portion of the flatwork piece upon the friction belt means, the nip roller means is automatically lowered against the top of the flatwork piece on the friction belt means and the latterally outwardly movable flatwork piece smoothing means is operated.

3,772,809

COCKTAIL PICK

Rudy F. Schneller, 1 Vanguard Ct., O'Fallon, Mo.

Filed Mar. 18, 1970, Ser. No. 20,553

Int. Cl. A44c 3/00

U.S. Cl. 40—2 R **7 Claims**

A combination cocktail pick, stirrer and food marker comprising an elongated member pointed at one end thereof, a plaque portion disposed at the opposite end of said elongated portion and operably mounted thereto and clip means operably mounted on said elongated member.

3,772,810

REFLECTING FIGURE TO BE APPLIED TO A SUPPORT SURFACE

Sam Kupperman, and Dennis I. Kupperman, both of 4139 Main St., Skokie, Ill.

Filed Feb. 11, 1972, Ser. No. 225,436

Int. Cl. G09f 7/12

U.S. Cl. 40—125 A **1 Claim**

A figure having a recognizable form, formed and molded of a reflecting material to provide a substantially rigid body having a front side and a back side, which back side is formed to provide prismatic surfaces, with the back side having adhesive means which permits the figure to be secured and supported on a supporting surface whereby a light beam directed against the front side wall pass through the body to strike the prismatic surfaces and produce a variegated reflected pattern.

3,772,811

MOTORIST'S EMERGENCY WARNING APPARATUS

Richard E. Alsup, 1917 N. Grace Ave., Hollywood, Calif.

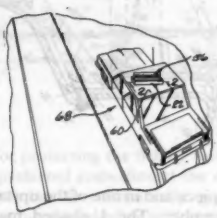
Filed Aug. 14, 1970, Ser. No. 63,798

Int. Cl. G09f 7/00

U.S. Cl. 40—129 C **6 Claims**

A motorist's emergency warning apparatus adapted to be normally stored away in a box which may be employed as the hereinafter-referred-to supporting base means for one aspect of the invention and with the device comprising an effectively collapsible, support standard means and base means adapted to be effectively moved between a collapsed or unassembled,

unsupported, and non-displaying relationship and an effectively assembled, supported, and displaying relationship. The support standard means includes a plurality of relatively movable frame means portions provided with engageable and disengageable connection means for connecting the frame means and the base means in the assembled, supported, and displaying relationship when desired and for effectively disassembling and/or collapsing the apparatus for ready storage in

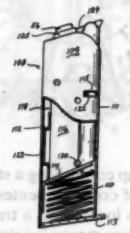


the box when it is not to be used. The frame means is provided with visibly perceptible, display panel means carried thereacross and defining a display panel of a substantial area positionable in the line of sight of an oncoming motorist and provided with information-bearing display material indicating an emergency condition of an associated motor vehicle and, in certain forms of the invention, indicating the exact nature of said emergency condition.

3,772,812
SUB-CALIBER CONVERSION UNIT

Robert W. Day, 7515 Stagecoach Ln., San Antonio, Tex.

Division of Ser. No. 167,208, July 29, 1971, Pat. No. 3,724,326. This application Mar. 26, 1973, Ser. No. 344,732
Int. Cl. F41c *25/06*
U.S. Cl. 42—7 **6 Claims**



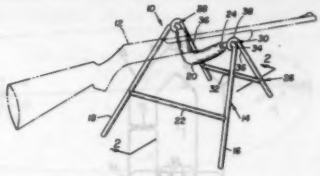
A sub-caliber conversion unit adapted to be detachably secured to and firmly supported by the lower receiver group of a larger caliber pistol, wherein the slide in such conversion unit operates independently of the barrel, and means are provided to permit full travel of said slide.

3,772,813
RIFLE SHOOTING STAND

Lawrence Sands, 1415 Holiday Park Dr., Wantagh, N.Y.

Filed June 9, 1971, Ser. No. 151,375
Int. Cl. F41c *29/00*
U.S. Cl. 42—94 **1 Claim**

A rifle shooting stand formed of two stand members, each preferably consisting of machine-bendable wire. The stand members are pivotally connected together to unfold into a spread position preparatory to serving as a support for a rifle in shooting position thereon. A V-shaped bend in one stand member is adapted to supportingly receive the rifle and also effectively prevents relative sliding movement of the two stand members. Thus, the stand construction, by which the two



stand members are confined solely to pivotal movements, is simple and yet provides sturdy support for the rifle.

3,772,814
LATCH AND RELEASE MECHANISM FOR HARPOON AND FISHHOOK COMBINATION

Earl Oliver Sylvester; Ronald Sylvester, both of 1241 Sherman St., San Jose, Calif., and Richard Sylvester, 285 Bangor Ave., San Jose, Calif.

Filed Mar. 13, 1972, Ser. No. 234,055
Int. Cl. A01k *81/00*
U.S. Cl. 43—6 **3 Claims**

A harpoon arranged for sliding movement in a sheath like body under the influence of a spring means and a latching means between the harpoon and sheath operatively associated with a bait line bearing against the latching means to release the same upon a tug on the bait line.

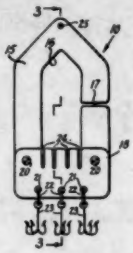
3,772,815
FISH LURE RETRIEVER

Fred L. Burgess, Castle City Mobile Park, Newcastle, Calif.

Filed Mar. 3, 1972, Ser. No. 231,540
Int. Cl. A01k *97/00*
U.S. Cl. 43—17.2 **1 Claim**

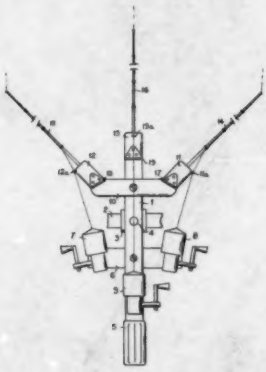
The fish lure retriever of the present invention includes a weighted body having a large central aperture opened on one side by a narrow slot. The body is connected to a heavy cord and permitted to slide down a fish line having a snagged lure on its lower end. Slotted weights are detachably connected to the lower end of the retriever, the slots opening into the aperture to engage the fish line. The body has a plurality of grapple

hooks loosely secured to its lower end and adapted to grapple with the object on which the lure is snagged so that the object



can be lifted to the surface along with the lure snagged thereon, or if the object is too heavy to pull the lure therefrom.

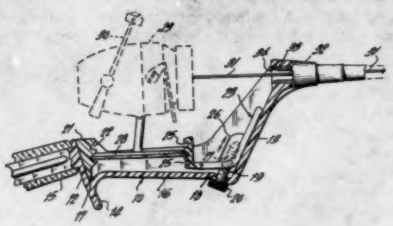
3,772,816
MULTIPLE FISHING POLE DEVICE
Ray H. Ridge, P. O. Box 386, Trenton, Ga.
Filed Sept. 27, 1972, Ser. No. 292,820
Int. Cl. A01k 97/10
U.S. Cl. 43—21.2 7 Claims



A fishing device which may be attached to a boat for supporting a plurality of rods in a divergent relation when fishing so that each rod may be independently raised for removal of fish. The device is arranged so that all of the rods may be folded back onto the device in a compact form when it is desired to carry or transport the device. The rods are supported within hinged rod support means spaced along a cross member. The cross member is mounted on a main support member, and the hinges are disposed at an angle to the axis of both the cross member and the main support member.

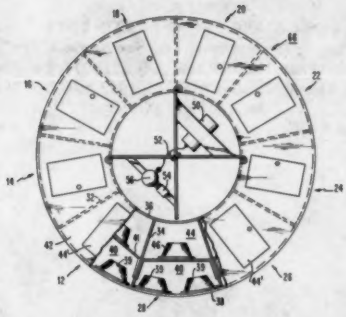
3,772,817
HANDLE AND REEL MOUNT CONSTRUCTION
Albert L. Bowerfind, East Paterson, N.J.; Leonard H. Sobel, Rockaway Park, N.Y., and Zvi Aviezer, New York, N.Y., assignors to Daggem, Inc., New York, N.Y.
Filed Jan. 7, 1972, Ser. No. 216,186
Int. Cl. A01k 87/06
U.S. Cl. 43—22 7 Claims

A simple, inexpensive and advantageous construction is provided for the handle and reel mounting of a fishing rod wherein multi-level chock means are provided for accommodating reels of different sizes and dimensions so that the fishing line can be axially fed into or retracted from the associated hollow collapsible fishing rod. A threaded boss and screw arrangement, mounted in a U-shaped member, locks and unlocks the positioned reel, the base or flange of which is receivable in any pair of oppositely facing channels formed in



a channeled end piece and in one of the upstanding portions of the U-shaped member. The U-shaped member is slidably fitted into a depressed intermediate portion of the fishing rod handle and the channeled end piece is mounted at the opposite end of the intermediate portion.

3,772,818
CRUSTACEAN TRAP
Jerome J. Gardina, 10 Sheridan St., Brockton, Mass.
Filed Aug. 5, 1971, Ser. No. 169,288
Int. Cl. A01k 69/08, 97/12
U.S. Cl. 43—100 6 Claims

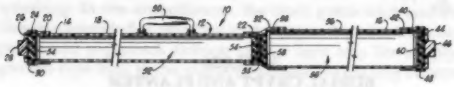


A crustacean-type trap comprising a stable base member for supporting a plurality of compartmented sections and including first tracking means located on a trap capable of engagement with second tracking means located on a harvesting vessel. The first and second tracking means being adapted for relative movement with respect to each other so as to allow removal of entrapped crustaceans from the plurality of compartmented sections. Automatically releasable indicator means attached to the trap prevents unauthorized crustacean removal until the vessel reaches the harvesting area.

3,772,819
CARRYING CASE FOR FISHING RODS AND REELS
Waldo O. Ratzlaff, 10705 Sunymeade Pl., Oklahoma City, Okla.
Filed Oct. 12, 1972, Ser. No. 299,830
Int. Cl. A01k 97/08
U.S. Cl. 43—26 6 Claims

A case suitable for carrying a plurality of fishing rods and reels which includes an elongated tubular body comprising a first tubular member and a second tubular member secured to the first tubular member in axial alignment therewith. A wall is formed within the tubular body at the point of connection between the first and second tubular members thereby form-

ing separated storage compartments within the tubular body. Removable cap means are disclosed on the opposite end portions of the tubular body for opening and closing the respective first and second compartments. A handle is provided for lifting the carrying case. Cushion means are positioned within



the carrying case for protecting the fishing rods and reels carried therein. In a preferred embodiment the diameter of the second tubular member is substantially greater than the diameter of the first tubular member so that the second tubular member is of sufficient size to receive a fishing reel therein.

3,772,820

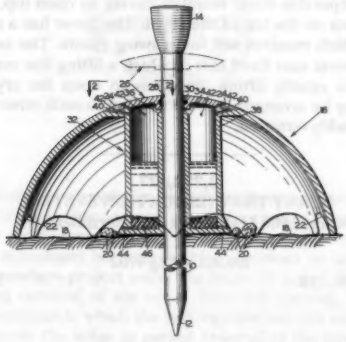
BAIT STATION FOR SLUGS, SNAILS AND THE LIKE

Helen I. Bond, 1262 - 12th Ave., Longview, Wash.

Filed Mar. 20, 1972, Ser. No. 236,137

Int. Cl. A01m *1/20*

U.S. Cl. 43—131 **9 Claims**



A bait station particularly adapted for harboring poison bait for slugs, snails and the like comprises a central support post and a protective shield supported on the post and adapted to overlie a ground area having placed thereon a predetermined pattern of bait. Access openings are provided along the peripheral margin of the shield to afford access to the bait by the slugs and snails. A water reservoir associated with the station collects rain and sprinkler water and meters it to the bait in an optimum amount for activating the bait.

3,772,821

WHIRLING SOUND-PRODUCING TOY

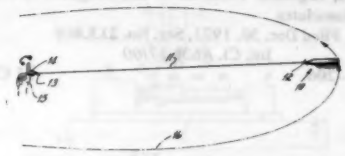
Richard Madden, Science Hill, and Donald A. Madden, Somerset, both of Ky., assignor to Interrelated Industries Inc., Lexington, Ky.

Filed Apr. 28, 1972, Ser. No. 248,588

Int. Cl. A63h *5/00*

U.S. Cl. 46—52 **9 Claims**

A sound-producing toy has a thin elongated body which is attached to a cord at one end. Apertures in the body adjacent the other end create a distinctive sound or noise as the body is



swung through the air on a cord. The noise producing apertures comprise edge serrations and/or openings through the body.

3,772,822

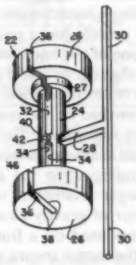
INTEGRAL WHEEL AND POWER ELASTIC STRIP TO POWER TOY VEHICLE

Sam Kupperman, and Dennis I. Kupperman, both of 4139 Main St., Skokie, Ill.

Filed Sept. 11, 1972, Ser. No. 287,795

Int. Cl. A63h *29/18*

U.S. Cl. 46—90 **9 Claims**



A power unit for operating a toy vehicle which comprises a wheel or a plurality of wheels, said wheel or wheels being integrally molded with an elastic strip, with the opposite ends of the elastic strip detachably secured to a toy vehicle which anchors the opposite end of the strip against rotation to permit winding of said strip for storing the power or energy so that when the vehicle is manually released the strip will unwind and propel the vehicle.

3,772,823

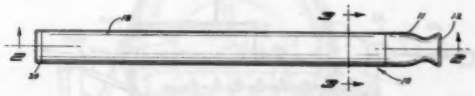
MOOSE CALL

George L. Herter, Waseca, Minn., assignor to Herter's Inc., Waseca, Minn.

Filed June 29, 1972, Ser. No. 267,421

Int. Cl. A63h *5/00*

U.S. Cl. 46—180 **2 Claims**

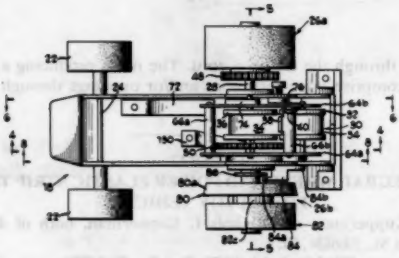


A moose call with a tubular hardwood mouthpiece for passage of air to vibrate the low frequency reed, an elongate tube extending from the front of the mouthpiece and having an end ring providing sound reflective surfaces to cause reverberation of sound in the elongate tube and producing an output sound simulating the mating call of a moose.

3,772,824
TOY VEHICLE APPARATUS

Rouben T. Terzian; Marvin I. Glass, both of Chicago, and Ira B. Gilford, Highland Park, all of Ill., assignors to Marvin Glass & Associates

Filed Dec. 30, 1971, Ser. No. 213,866
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 21 Claims

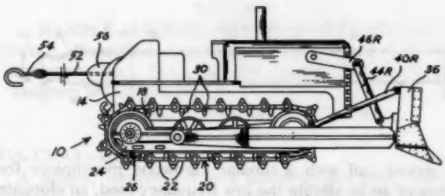


A toy vehicle capable of being selectively conditioned to have varying operating characteristics, particularly "trick" type operations. The vehicle has a pair of front wheels and a pair of back wheels, one of the back wheels being fixed axially of and rotatable with the rear axle and driven by motor means, through the axle. The other rear wheel is freely rotatable relative to and slidably mounted on the rear axle and is of a larger diameter than said one rear wheel. The vehicle may be caused to spin about the larger diameter wheel, or travel in a straight or curved path depending upon the axial disposition of the slidably mounted larger diameter wheel. The vehicle is designed with its center of gravity close to the rear axle, and the motor means is mounted on a framework pivoted about the rear axle, so that the motor means may be shifted fore and aft, changing the center of gravity and causing the vehicle to rock about the rear axle. These various motions are programmed by conditioning the various operative components of the vehicle by means of a power conditioning drive ramp and guide track. Interchangeable plates are provided for mounting on the end of the guide track. The plates have upwardly protruding tabs which are operatively engageable with the operative components of the vehicle to condition the vehicle and thereby program its operating characteristics. The drive ramp also includes an oscillating lever and gear linkage for conditioning a winding power source on the vehicle.

3,772,825
TOY TILT BULLDOZER WITH WINCH

Robert A. Gagnon, Star Rt. 2, P.O. Box 944, Trail, Oreg.

Filed Nov. 24, 1972, Ser. No. 309,210
Int. Cl. A63h *33/26*
U.S. Cl. 46—244 A 9 Claims



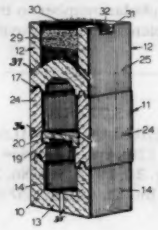
A remotely controlled toy tilt bulldozer is provided which is equipped with a power operated winch. The toy is intended to resemble in appearance and performance a large, caterpillar tread, tiltable blade, road building and logging machine. The simulated machine is widely used for clearing and grading logging roads.

A power operated winch and line on the machine can be used for pulling in and for dragging objects such as logs, for helping to pull the bulldozer, itself, up steep and/or dangerous grades backward, toward a fixed anchorage, as a safety anchorage, and for other purposes. The remotely controlled toy can do on a small scale whatever the simulated machine can do.

3,772,826
BURIAL CRYPT AND PLANTER

George W. Ferver, 2320 Penna Ave., Ext. R.D., Warren, Pa.

Filed May 27, 1971, Ser. No. 147,342
Int. Cl. E04h *13/00*; A01g *9/02*
U.S. Cl. 47—34 3 Claims

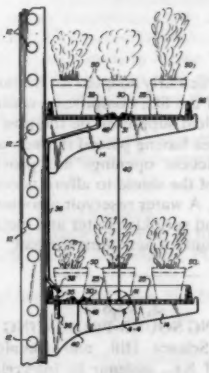


The specification discloses a readily openable crypt made up of an operable cover member having an open top, a cover which seats on the top of the crypt. The cover has a cavity in its top which receives soil for growing plants. The cover has stainless steel bars fixed in it to which a lifting line may be attached for readily lifting the cover to open the crypt. The crypts may be arranged in close relation to each other and the covers readily removed.

3,772,827
PLANT TRAY IRRIGATION SYSTEM

R. Louis Ware, 2108 Middlefork Rd., Northfield, Ill.

Filed Oct. 6, 1971, Ser. No. 187,061
Int. Cl. A01g *9/02*
U.S. Cl. 47—39 9 Claims



A plant tray irrigation system is disclosed in which a plurality of trays are spaced atop each other. A pumping system from a reservoir tray at the bottom of the unit delivers water on a timed basis to the top tray. Each tray is provided with an overflow having a peripheral rim determining the depth of water in

the tray for the overflow, and in addition a drain having a ridge, its perimeter insuring a small amount of water in the base of the tray, and a drain guide wick which is positioned centrally of the drain ridge and dimpled to provide for capillary action to drain and dry the tray when the irrigation is concluded. A drain guide in the form of a string or elastic vertically oriented member which is secured at the base of the dimple of the drain guide wick, and anchored to the tray below guides the drainage in a steady stream to inhibit dripping and splashing. In one embodiment, the drain guide wick and overflow are provided at an offset in the tray so that the tray can be positioned piggyback fashion atop a light tray for supplying growth-type light to the plants positioned on the tray beneath.

3,772,828

MANHOLE COVER

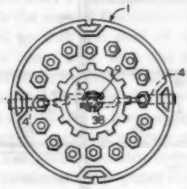
William Chahley, Saint John, New Brunswick, Canada, assignor to William Chahley Ltd., Saint John, New Brunswick, Canada

Filed Dec. 2, 1971, Ser. No. 204,094

Claims priority, application Canada, Nov. 10, 1971, 127,352

Int. Cl. E02d *29/14*

U.S. Cl. 49—465 **8 Claims**



A manhole cover including a main body dimensioned to fit in a manhole opening and rest on a ledge thereof, two locking members slidably mounted in the body for radial inward and outward movement between locking positions in which the locking members project under the ledge, in use of the cover, to prevent removal of the cover from the opening, and unlocking positions in which the locking members are withdrawn from beneath the ledge to permit removal of the cover from the opening, and operating mechanism in the body for actuating the locking members, the operating mechanism including means for locking the locking members against radial movement from the locking positions, and means for reciprocating the locking members between the locking and unlocking positions.

3,772,829

AUTOMATIC MEASURING DEVICE

Hiroaki Asano, Kariya-shi, and Ikuo Otsu, Toyota, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

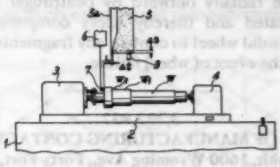
Filed June 24, 1971, Ser. No. 156,175

Claims priority, application Japan, July 15, 1970, 45/61907

Int. Cl. B24b *49/18*

U.S. Cl. 51—5 **12 Claims**

When a concave-shaped grinding wheel is dressed by a dressing mechanism, the width thereof is reduced by a predetermined amount. To eliminate machining error on a workpiece resulting from the reduction in the width of the grinding wheel, an automatic measuring device according to the present invention is provided for moving a measuring head



in an axial direction relative to the workpiece during every dressing operation in conjunction with the dressing mechanism.

3,772,830

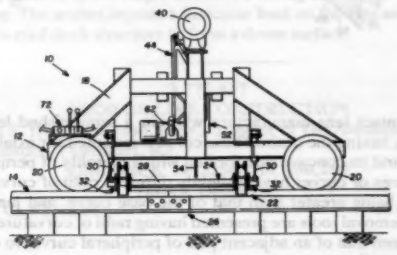
RAIL CROPPING SAW

Lester N. Hambrick, Irving, Tex., assignor to Trakwork Equipment Company, Irving, Tex.

Filed Aug. 9, 1971, Ser. No. 169,987

Int. Cl. B24b *23/00*

U.S. Cl. 51—178 **11 Claims**



In a rail cropping saw, a vehicle supports a pair of rail clamping members and a saw blade. The vehicle is adapted for movement along a trackway to the location of a bolted joint between two rails of the trackway. The rail clamping members are supported on a frame which is attached to the side of the vehicle opposite the bolted joint, and function to grip the rails on opposite sides of the bolted joint. The saw blade is rotated about an axis extending parallel to the rails and is simultaneously oscillated in a direction extending perpendicular to the rails to sever the bolted joint from one of the rails.

3,772,831

GRINDING WHEEL

Milton C. Shaw, 132 Maple Heights Rd., Pittsburgh, Pa.

Filed Jan. 21, 1972, Ser. No. 219,683

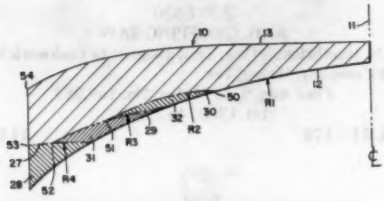
Int. Cl. B24d *5/16*; B24b *41/00*

U.S. Cl. 51—206 R **10 Claims**

A grinding wheel assembly particularly suited for high speed operation, comprising a solid wheel mounted in an outer

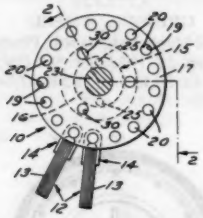
peripheral recess of a wheel clamping mechanism, and a plurality of tapered wedges adapted to fit between the wheel surface and a complementarily tapered wall of the recess. The wedges move radially outward by centrifugal force as the wheel is rotated and thereby apply compressive reactive forces to the solid wheel to contain any fragments or pieces of the wheel in the event of wheel failure.

3,772,832
METHOD OF MANUFACTURING CONTACT LENSES
Joseph H. Smith, 1600 Wyoming Ave., Forty Fort, Pa.
Continuation of Ser. No. 92,444, Nov. 24, 1970, abandoned.
This application Aug. 16, 1972, Ser. No. 281,234
Int. Cl. B24b *1/00, 9/14*
U.S. Cl. 51—284 **3 Claims**



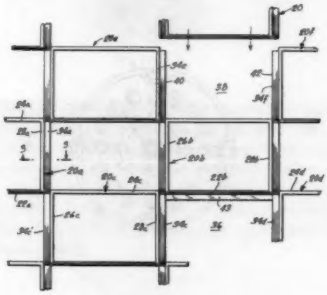
Contact lens manufacture wherein a semifinished lens or blank having the desired base curve is mounted for axial rotation and its concave side formed with a plurality of peripheral surfaces or curves having slightly different radii of curvature, each being greater than that of the base curve, and juncture line removal tools are presented having radii of curvature each between that of an adjacent pair of peripheral curves to effect juncture line removal.

3,772,833
REPLACEMENT PACK CYLINDRICAL HUB STRUCTURES
James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.
Filed June 23, 1971, Ser. No. 156,008
Int. Cl. B24b *9/02*
U.S. Cl. 51—337 **4 Claims**



An axial hub structure for an abrasive work finishing wheel has a pair of parallel, axially spaced and coaxial end plates in the form of annular discs surrounding and appropriately connected directly to an axial driver, said plates extending radially normal to the axis of the wheel and serving to axially confine therebetween a circumferential series of packs of flexible abrasive sheets. Each of the packs is pivoted on one of a circumferentially spaced series of pins extending between the end plates and parallel to their axis. One of said plates is a removable one held in predetermined axial spacing from the other plate either by a sleeve-like hub part permanently connected unitarily to said other plate, by a separate sleeve extending between the plates, or by the pack pivoting pins themselves; and such sleeve or pin parts axially abut the removable end plate. On certain of the illustrated embodiments the non-removed end plate has through holes to receive prongs of a special knock-out tool, thus to facilitate displacement of the removable plate from the pin pivot and spacer means for access to the finishing packs in replacing any of the latter. In an alternate version the removable end plate is releasably held in place by a collar removably applied to the wheel's driver shaft.

3,772,834
MODULAR MULTIPLE-UNIT BUILDING CONSTRUCTION
Pierre Barraud, Miramar, P.R., assignor to Industrialized Systems Corporation, Hato Rey, P.R.
Filed Jan. 15, 1971, Ser. No. 106,652
Int. Cl. E04b *1/348*
U.S. Cl. 52—79 **9 Claims**



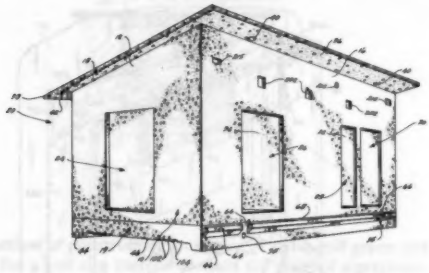
Modular building construction utilizing box-like modules. Each module has side walls and a floor slab and a ceiling slab. One or more support columns are included on the outside surface of each side wall. Each support column comprises a metal shell substantially U-shaped in section and which extends vertically along the side wall. The shell is capped at its ends by metal plates which may be welded to corresponding plates of other support columns of modules thereabove and therebelow in a multi-level building to provide for a continuous metallic support column vertically throughout the building. In a multi-level building the modules in each level are spaced apart from each other, with the modules in one level being positioned over the spaces between modules of the next lower level. The side walls of a module in a level are positioned inside the planes defined by the outside edges of the columns of two-spaced apart modules in the next lower level and the next higher level to ensure that the side walls of the modules are non-load bearing. Thus, all vertical loads in the structure are supported by the columns. Post tensioning may be employed in abutting floor and ceiling slabs at any level in a multi-level structure or horizontal beams may be employed in the spaces between modules to account for horizontal loading. In the making of the modules a floor slab is first cast. A mold is positioned over the floor slab, and the spaced-apart side walls are cast along with a ceiling slab. The mold is then removed from the structure thus formed without any movement of that cast structure so as to position the mold for another casting operation.

3,772,835

HOUSING

Elmer Adrain Cox; Wayne Douglas Tiner, and Ritchey Paul Woods, Jr., all of San Antonio, Tex., assignors to H. B. Zachry Co., San Antonio, Tex.

Filed Oct. 21, 1971, Ser. No. 191,505
Int. Cl. E04b 7/02; E02d 27/42
U.S. Cl. 52—79 19 Claims



A pair of precast concrete building units are joined together to form a modular concrete house. Each concrete building unit includes a floor slab, upright load-bearing exterior walls joined with the perimeter of the floor slab, and a sloping roof cast integrally with the tops of the exterior walls. The building units are arranged so that the roof of each unit slopes upwardly toward the other unit, with the elevated ends of the roofs meeting to form an inverted V-shaped pitch roof. In one embodiment of the building unit, the elevated end portion of each roof projects outwardly to form a cantilevered overhang, with the cantilevered portions of two side-by-side building units covering an elongated corridor formed between the two units. An upright concrete shear panel covers each end of the corridor and rigidly connects the two building units together. Alternatively, the cantilevered overhang may be eliminated and two side-by-side units connected together without a central corridor or shear panels being present between them. Interior walls are cast integrally with the exterior walls and the roof to divide the building units into separate rooms. The bottoms of the interior walls are spaced above the floor slab so that no loads are transmitted to the floor slab by the walls, and plumbing and wiring are run through the space between the bottom of the interior walls and the floor slab. A reinforcing cage formed from welded wire mesh is embedded in each exterior wall. Insulation boards preferably made of plastic foam are placed inside each wire mesh cage and spaced longitudinally apart along the length of each wall, thereby forming spaced apart transverse concrete webs which join together opposite faces of the wall. A separate elongated longitudinal ridge extending along each longitudinal edge of the floor slab projects downwardly from the undersurface of the floor slab. Several parallel transverse ridges extend the width of the floor slab between the longitudinal ridges and project downwardly from the undersurface of the floor slab. A plurality of spaced apart downwardly opening notches are cast in the bottom edges of the transverse ridges to form shear keys which are embedded in the foundation to prevent movement of the floor slabs relative to each other or the foundation.

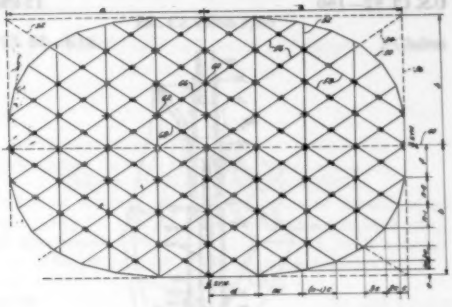
3,772,836

ROOF CONSTRUCTION

David H. Geiger, 788 Riverside Dr., New York, N.Y.

Continuation-in-part of Ser. No. 80,048, Oct. 12, 1970. This application Apr. 12, 1971, Ser. No. 133,198
Int. Cl. E04b 1/32
U.S. Cl. 52—80 8 Claims

A roof structure having a peripheral support ring is disclosed wherein the ring conforms in plan substantially to a closed curve having major and minor axes and at least two skewed axes of symmetry. A plurality of sets of arches are connected to the ring to form the roof, with the arches of at least two sets respectively extending in plan substantially parallel to



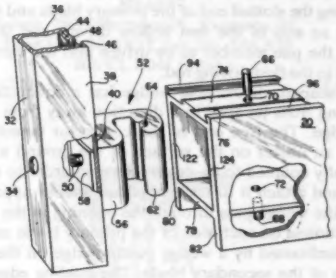
a separate one of the skewed axes of symmetry of the closed curve and the arches of another set extending in plan substantially parallel to the major and/or the minor axes of the closed curve. The arches impose a funicular load on the ring and support a roof deck structure to form a dome surface.

3,772,837

DOOR OR LIKE CONSTRUCTION

John E. Hunt, Norwood, Mass., assignor to The Alumiline Corporation, Pawtucket, R.I.

Filed June 6, 1972, Ser. No. 260,269
Int. Cl. E04b 1/58
U.S. Cl. 52—127 10 Claims



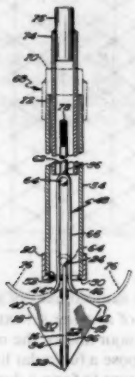
The present invention is directed to the building art, comprised generally of a door or window structure embodying a peripheral framework of horizontal and interconnecting vertical rail members, supporting by means of gasket material and suitable supporting structure glazing material. The framework is suitably mounted by hinge means for swingable or slidable movement into and out of the encasing wall opening. The horizontal and vertical rail sections when placed in abutting right angular relationship to one another are rigidly interconnected and precisely aligned with respect to one another by means of a particularly contoured connector member or corner block adapted to receive pin means through apertures in the horizontal rail section, the connector member being threadably or otherwise attached to the vertical rail section through a contoured tension-receiving plate member. In this manner, after assembly of the parts, and securement of one to the other, a crimping or crushing action is exerted upon a tongue or "T" section on the vertical rail, and a structurally sound joint is assured without resort to time-consuming welding techniques or generally equivalent expedients.

3,772,838

GROUND ANCHOR APPARATUS

Sep Jacob Virnig, 620 N. 8th St., Medford, Wis.

Filed July 27, 1972, Ser. No. 275,734
Int. Cl. E02d 5/74
U.S. Cl. 52—160 11 Claims



A ground anchor apparatus drivable into the earth by first and second hollow driving rods, the anchor apparatus having a pile member with an elongated generally flat primary blade and a secondary blade fixed to the primary blade with sections extending outwardly from each of the flat sides of the primary blade at right angles thereto. One end of the primary blade is pointed to form an earth piercing end, and the opposite end is provided with a pair of slots thereon spaced equally from the plane of the secondary blade. An annular collar is seated in the slots and fixed to the primary blade, its central opening straddling the slotted end of the primary blade and arranged to receive an end of the first hollow driving rod therein, permitting the pile member to be driven into the earth by force applied to the first driving rod.

A U-shaped, deformable wedge has a connector member extending from its apex in a direction away from the legs of the wedge. The free end of the connector member extends toward an object on the surface of the ground and is there eventually coupled to tie down means in order to confine the object and attach it to the embedded anchor apparatus. The legs of the wedge pass through the opening in the collar, one leg positioned on each side of the primary blade and each leg being confronted by a wedge guiding edge on the extending sections of the secondary blade. The guiding edges are constructed and arranged to contact the adjacent leg of the wedge when the wedge is driven downward through the annular collar and against the guiding edges by the second hollow driving rod which is inserted over the connector member to contact the apex of the wedge. Downward force applied to the second driving rod forces the legs of the wedge through the collar and against the guiding edges, the annular collar and the guiding edges cooperating to deform the legs of the wedge outwardly from the pile member along a curve so as to assume a splayed position resistant to extraction of the pile member from the earth. The first and second driving rods are removed from the anchor apparatus after driving it into the earth and the tie down means then coupled to the connector member.

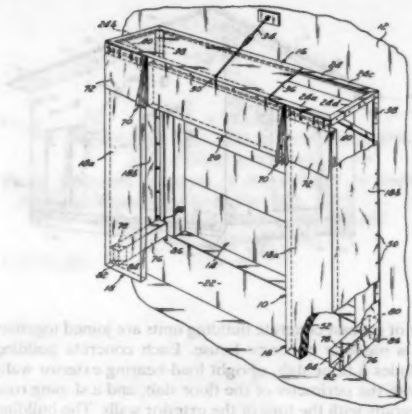
3,772,839

WEDGE THROUGH TYPE CLOSURE FOR DOCK DOOR

Lawrence J. Timbers, 1317 E. 260 St., Mentor, Ohio

Filed May 10, 1971, Ser. No. 141,475
Int. Cl. E06b 9/00, 5/00
U.S. Cl. 52—173 6 Claims

A wedge-through type closure for a dock door adapted to be installed around a dock door in a building wall and project therefrom forming a construction through which the rear end of a truck, trailer, or similar vehicle may be wedged. The closure includes resilient jamb and lintel members hung from the top cover means. Each of the jamb members comprises a pair of long flexible panels of fabric or the like. A first panel of each pair is connected to the building wall along a lateral edge thereof and it is disposed in a sidewardly facing position. The second jamb panel is disposed in a frontwardly facing position and it has one of its lateral edges connected to an adjacent



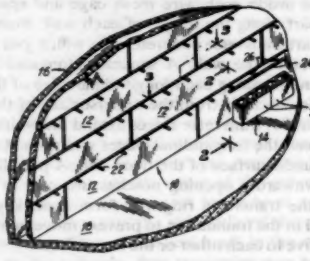
lateral edge of the first panel providing the jamb with an L-shape cross-section. Lower support and closure foam blocks are disposed along the lower edges of each first or side jamb panel and they are arranged to work between the building wall and an associated second or front jamb panel. The lintel member is provided with a bellows-like structure arranged to sealingly receive the top rear corners of the vehicle body. The jamb and lintel members are resiliently deflected, inwardly upon wedging-contact with such a vehicle and engage against the top and sides thereof to maintain a substantial closure.

3,772,840

INSULATING AND WATERPROOFING APPARATUS

Alfred A. Hala, 28 Meeks Ln., Islip, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,206
Int. Cl. E04b 1/70; H04b 2/28
U.S. Cl. 52—303 60 Claims



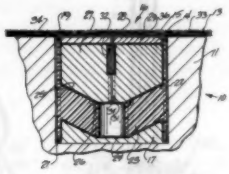
A combined insulating and waterproofing apparatus, system and method comprising substantially rectangular shaped blocks of expanded polymeric plastic materials having insulative characteristics which blocks are disposed in predetermined adjacent proximate relationship with one another and positioned between the inner and outer wythes of a wall construction with the horizontal edges of the blocks being angularly inclined in a downward direction as viewed from the inner wythe with respect to the outer wythe.

3,772,841

METHOD OF CONSTRUCTING INDOOR OR PATIO GREEN AND A PLUG FOR THE GOLF CUP THEREOF

Anthony J. Barak, 12230 Woolworth St., and Walter P. Champion, 11411 Elm St., both of Omaha, Nebr.

Filed Nov. 24, 1969, Ser. No. 879,375
Int. Cl. A63b *57/00*; E04h *14/00*
U.S. Cl. 52—741 4 Claims



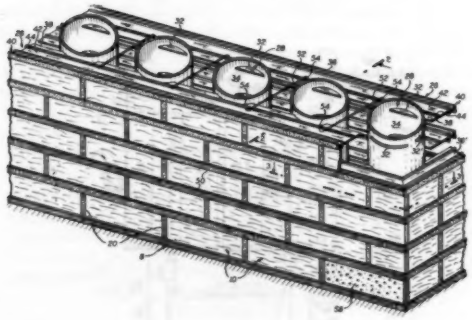
A method of constructing an indoor or patio golf green and a plug for a golf cup thereof wherein the plug, of a predetermined depth for insertion in a golf cup, is provided for the purpose of filling the cup and rendering the plane of the top surface of the plug to a uniform level with the planar surface surrounding the cup. The plug having at least a pair of interlocking members, adapted to be disposed in the cup, having bottom end walls conforming to the bottom walls of the cup and a circular disc top of substantially the same diameter as the inside diameter of the cup at the upper edge thereof, with the top being secured to and perpendicularly disposed to the upper end walls of the members.

3,772,842

BUILDING WALL CONSTRUCTION

Edmund C. Barbera, 55 Hillandale Rd., Port Chester, N.Y.

Filed Aug. 2, 1971, Ser. No. 168,202
Int. Cl. E04b *2/28, 2/40, 2/30*
U.S. Cl. 52—426 7 Claims



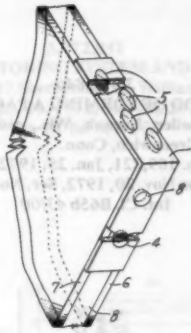
A building wall construction that includes a plurality of panel elements which are mounted on a slotted supporting structure to form a wall portion thereof, or which are mounted on opposed surfaces of said slotted supporting structure, in spaced apart relation, to form a spaced wall construction.

3,772,843

MULTIPANE STRUCTURE

Gustav Leder, Offenbach, Germany, assignor to USM Corporation, Boston, Mass.

Filed Feb. 25, 1972, Ser. No. 229,475
Claims priority, application Germany, Feb. 25, 1971, G 71 07 129.9
Int. Cl. E06b *3/66*
U.S. Cl. 52—616 3 Claims



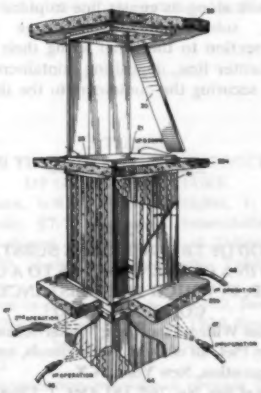
Corners of edge bonded multipane structures are protected by angle members having holes through which edge sealing material extends as holding pegs.

3,772,844

METHOD OF FABRICATING FIRE RESISTANT DUCT OR SHAFT

Parker R. Thorne, 2839 Sheridan Pl., Evanston, Ill.

Filed May 24, 1972, Ser. No. 256,573
Int. Cl. E04f *13/04*
U.S. Cl. 52—741 5 Claims



A method of fabricating a fire resistant duct or shaft wherein channel shaped runners are installed on the floor and ceiling about aligned openings therein, assembling a plurality of elongated panel blanks to extend vertically beween the floor and ceiling runners, each panel being equipped with longitudinally extending edge flanges and central studs, securing

the flanges together and applying a mesh to the studs and thereafter covering the exterior of the panel blanks with at least two layers of plaster.

3,772,845

Patent Not Issued For This Number

3,772,846

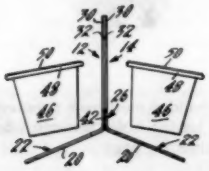
METHOD OF FORMING A PACKAGE

David Charles Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Division of Ser. No. 109,221, Jan. 25, 1972, abandoned. This application Nov. 20, 1972, Ser. No. 307,807

Int. Cl. B65b *43/00*

U.S. Cl. 53—29 **5 Claims**



A composite frame-like holder for a plurality of articles such as containers, a blank for the composite holder, and a method of forming the holder from the blank. The composite holder is an aggregate of singly or multiply severable holder units which can be severed from the composite in a manner that maintains the integrity of the severed unit and of the remaining composite. Each unit has a sloping leg panel with an aperture for receiving an article, a vertical side panel and a top panel foldable over the article and having means adjacent its edge for securing it to the holder unit. The method includes folding the blank along its center line to place its sections in superimposed, substantially mirror-image juxtaposition, securing one section to the other along their center strips, severing the center line, depositing containers in leg panel apertures and securing the containers to the thereby formed holders.

3,772,847

METHOD OF TRANSFERRING SUBSTANCES CONTAINED IN A CURRENT OF GAS TO A CURRENT OF LIQUID, IN WHICH THE SUBSTANCES ARE CONCENTRATED

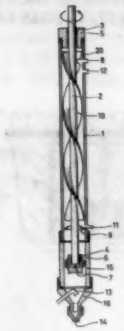
Johannes Paulus Willem Houtman; Walter Adam Cramer, and Gerrit Johan Piet, all of Delft, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 765,351, Oct. 7, 1968, abandoned. This application July 12, 1971, Ser. No. 161,974

Int. Cl. B01d *53/14*

U.S. Cl. 55—92 **2 Claims**

A method of transferring substances contained in a radioactive gas to a current of liquid in which the substances are concentrated after which they are analyzed. The gas is introduced into a vertically arranged cylindrical tube in which a rotary shaft provided with blades, preferably helical blades, rotates which blades carry a liquid which absorbs the gas. During the period in which the transfer of the substance is substantially



complete, the component of the velocity of the gas current in the direction of movement of the liquid is not greater than the travelling speed of the liquid.

3,772,848

METHOD AND MACHINE FOR PACKAGING ROD SHAPED ARTICLES

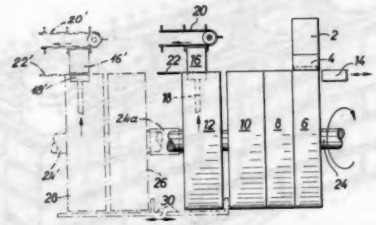
Willy Rudszinat, Dassendorf; Otto Erdmann, Hamburg-Bergedorf, and Wolfgang Zausch, Hamburg, all of Germany, assignors to Hauni-Werke Koerber & Co. K.G., Hamburg-Bergedorf, Germany

Division of Ser. No. 827,808, May 26, 1969, Pat. No. 3,608,270, which is a continuation-in-part of Ser. No. 582,106, Sept. 26, 1966, abandoned. This application Sept. 14, 1971, Ser. No. 180,431

Claims priority, application Germany, Oct. 12, 1965, H 57397

Int. Cl. B65b *19/10, 19/24, 43/10*

U.S. Cl. 53—24 **26 Claims**



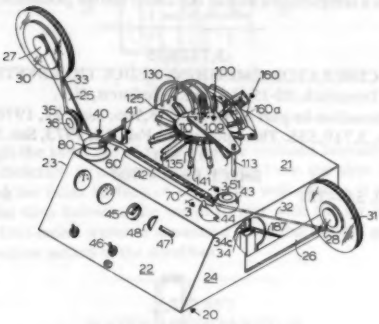
Cigarettes or like rod-shaped smoking articles are introduced into and sealed in packs by withdrawing them from a magazine, moving the thus withdrawn articles sideways and assembling moving articles into block-shaped groups, converting blanks of sheet material into open-ended packs which thereupon receive groups of articles, and sealing the open ends of successive packs.

3,772,849

SEED-TAPE MANUFACTURING MACHINE

Carlton D. Tobin, Jr., Hollister; Sheldon W. Moline, San Jose; Robert J. Walder, Soquel; Melvin D. Kirkpatrick, Salinas; Troy L. Cochran, Salinas, and Robert P. Watwood, Salinas, all of Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,318
Int. Cl. B65b 9/06
U.S. Cl. 53—180 26 Claims



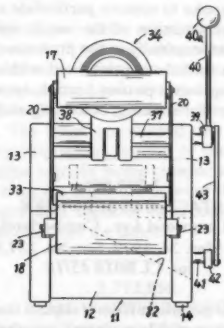
A seed-tape manufacturing machine having special means for handling different widths of tape and different kinds of seed, by virtue of distinctive aligning and troughing apparatus, and means for picking up and dispensing the seed having removable arms and replaceable nozzles.

3,772,850

WRAPPING APPARATUS FOR SEALING ARTICLES WITH THERMOPLASTIC RESIN FILMS

Wataru Fujiwara, 172 Kasahara-cho, Kasai City, Japan

Filed Apr. 4, 1972, Ser. No. 240,370
Int. Cl. B65b 9/12
U.S. Cl. 53—182 9 Claims



A wrapping apparatus for sealing articles to be packed in a pair of thermoplastic resin films, the films being rolled on a pair of upper and lower rolls. The apparatus includes a cutter means for cutting the films and a heat-sealing means for thermally sealing the articles therein at the periphery of the cut films.

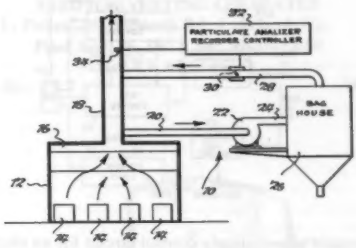
The apparatus automatically feeds the film off of the rolls for the next wrapping action, and restores the heat-sealing means to a disengaged position after the article has been sealed, thereby providing a continuous wrapping operation.

3,772,851

DUST MONITORING SYSTEM AND METHOD

Joseph G. Duffey, 247 Sherbrook Dr., Williamsville, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,794
Int. Cl. B01d 46/02
U.S. Cl. 55—18 6 Claims



A method of and system for monitoring a gaseous effluent and treating only a portion of such effluent to remove particulates and/or gaseous contaminants therefrom to bring the total discharged effluent within permissable limits. The total effluent is analyzed to determine the particulate and/or the contaminated gaseous content and a control monitor, responsive to the results of the analysis, is effective to vary the proportion of effluent treated relative to the untreated portion.

3,772,852

PROCESS FOR THE SEPARATION OR CONCENTRATION OF GASEOUS MIXTURE

Takaaki Tamura, 6-814, Toyama-Heights, 1, Toyama-cho; Hideo Minato, 57-7, 4-chome, Denenchofu; Toshimasa Ishiko, 6, 3-chome, Fukazawa, all of Tokyo, and Yoshio Shindou, 250, 2-chome, Tobe-machi, Yokohama, all of Japan

Continuation-in-part of Ser. No. 606,582, Jan. 3, 1967, abandoned. This application June 16, 1970, Ser. No. 46,839
Int. Cl. B01d 51/02
U.S. Cl. 55—32 3 Claims

The present invention provides a process for selectively separating or concentrating a specific gas or gases from a gas mixture by contacting said mixture at a room temperature under a normal pressure with an adsorbent prepared by activating at a temperature of about 350° to 700°C. a rock or mineral having the chemical composition mainly consisting of SiO_2, Al_2O_3 and H_2O and containing 1 to 10 percent by weight of the total of K_2O, Na_2O and CaO and also having the X-ray diffraction image shown in Table A or Table B of the specification.

3,772,853

AUTOMATIC VOLTAGE CONTROL APPARATUS FOR ELECTROSTATIC PRECIPITATORS

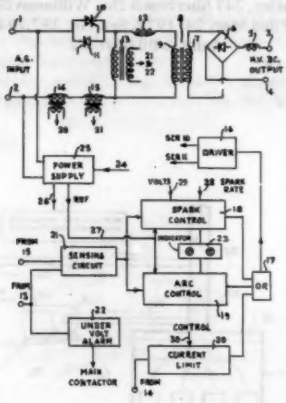
John Dennis Harry Burge; Denis Richard Leslie Chilton, and David Arthur Rich, all of London, England, assignors to Westinghouse Brake and Signal Company Limited, London, England

Filed Sept. 9, 1971, Ser. No. 178,880

Claims priority, application Great Britain, Sept. 24, 1970, 45,679/70

Int. Cl. B03c *3/68*; **G05f** *1/64*

U.S. Cl. 55—105 **10 Claims**



A thyristor power supply control circuit for an electrostatic precipitator which operates to tend to drive up the volts applied to the precipitator load and step it back by increments in response to sparking, the sparking being detected as a change from predominantly capacitive load circuit to a predominantly inductive load circuit and the change being instanced by current tending to flow after a.c. supply voltage zeros. Arcing within the precipitator is detected as such an inductive condition existing in two successive supply half cycles and leads to suppression of the arc by collapsing the precipitator volts for a suitable interval.

3,772,854

EXHAUST GAS DESULFURIZING METHOD AND APPARATUS

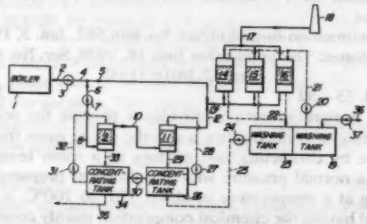
Zensuke Tamura; Yukio Hishinuma, and Norio Arashi, all of Hitachi-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed July 16, 1971, Ser. No. 163,345

Claims priority, application Japan, July 29, 1970, 45/65786

Int. Cl. B01d *53/04*

U.S. Cl. 55—73 **5 Claims**



A method of and an apparatus for removing sulfur oxides (SO_2, SO_3) contained in combustion gases by using activated carbon. In a series of operation of removing SO_2 and SO_3 in the exhaust gas by adsorbing them on activated carbon and washing the activated carbon with water, the resultant dilute sulfuric acid (H_2SO_4) is subjected to heat exchange with part of the exhaust gas, whereby the dilute sulfuric acid is concentrated and the temperature of the exhaust gas is lowered. The cooled exhaust gas is mixed with the main flow of uncooled exhaust gas to adjust the temperature of the whole exhaust gas to a level optimum for enabling the activated carbon to exhibit its highest adsorbing activity, and then the exhaust gas is contacted with the activated carbon, whereby the sulfuric oxides and other harmful gases contained in said exhaust gas are removed and the exhaust gas is released into the atmosphere at such a temperature as will not cause smoke pollution.

3,772,855

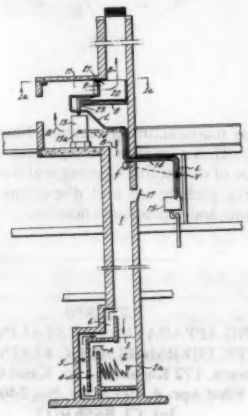
INCINERATOR EMISSIONS REDUCTION SYSTEM

Irving Domnitch, 80-15 41st Ave., Elmhurst, N.Y.

Continuation-in-part of Ser. No. 65,906, Aug. 21, 1970, Pat. No. 3,710,555. This application Feb. 14, 1973, Ser. No. 332,340

Int. Cl. B01d *47/06*

U.S. Cl. 55—227 **6 Claims**



A module for use in a system which upgrades the quality of pollution control within incinerators in which particulate emission is significantly reduced through automatic wet scrubbing of the smoke to remove particulate and other harmful material before emission of the smoke into the air. The system operates automatically in the presence of smoke and is self-cleaning. The module is positioned within an expansion chamber and comprises a porous barrier, spray heads, and a collection chamber for soaking, collecting and removing particulate.

3,772,856

STACK GAS SCRUBBER

Kevin E. Moran, Longwood Ave., Cumberland, Md.

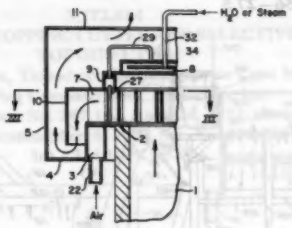
Filed Mar. 24, 1972, Ser. No. 237,860

Int. Cl. B01d *45/10*

U.S. Cl. 55—238 **9 Claims**

For reducing air pollution from a cupola stack or any other stack that delivers particulate matter into the atmosphere, a cyclone scrubber is mounted on top of the stack. This includes a ring of circumferentially spaced hollow vanes, each having a leading inner edge and a trailing outer edge. The tops of the vanes and the top of the space encircled by them are covered by a cap that projects outwardly beyond the vanes. A baffle wall encircling the vanes extends downwardly below them

from the outer edge of the cap. Spaced below this wall is a bottom wall that extends outwardly beyond the baffle wall to a side wall that extends upwardly. The inner edge of each of the vanes is provided with a pair of nozzles directed laterally in opposite directions for delivering air under pressure laterally into the slots between the vanes and directing it outwardly



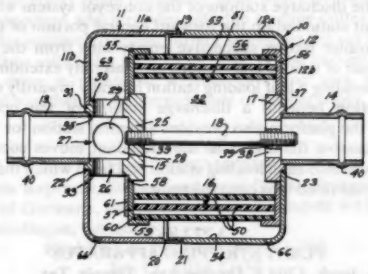
through the slots. All of the vanes are inclined laterally in the same direction to cause the air issuing from the slots to flow around the inner surface of the baffle wall. Water is sprayed into the slots between the vanes to mix with the air in those slots. Dirt-laden water is separated from the cupola gases by the cyclone action of the scrubber.

3,772,857

WATER AIR SEPARATOR

Richard H. Jackson, Downers Grove, and George H. Schulz, Naperville, both of Ill., assignors to Gits Bros. Mfg. Co., Chicago, Ill.

Filed Aug. 23, 1971, Ser. No. 173,984
Int. Cl. B01d *51/00*
U.S. Cl. 55—418 **3 Claims**



A unitized take-apart water separator including a cylindrical housing formed of two cup-shaped units placed face to face, one of said units having an entrance tube through the bottom wall thereof communicating to an interior baffle which directs the intake fluid to the interior periphery of the assembled housing. The other cup-shaped unit has an outlet tube communicating through its bottom of the interior of a filter capsule, the filter capsule being circular and having an outer diameter less than the inner diameter of the housing, the two cup-shaped units held together by a common axial stud and disassemblable one from the other.

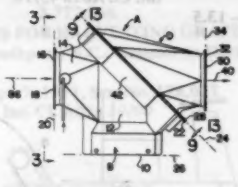
3,772,858

FUME WASHER HOUSING

Warren L. Klugman, Cuyahoga, Ohio, assignor to The Ceilcote Company, Inc., Berea, Ohio

Filed Apr. 23, 1971, Ser. No. 136,842
Int. Cl. B01d *47/06*
U.S. Cl. 55—503 **13 Claims**

A fume washer comprises a hollow body formed of synthetic plastic material. The fume washer is initially rotomolded in one-piece which is then cut into first and second structural members. One structural member has an outlet which may be positioned either horizontally or verti-



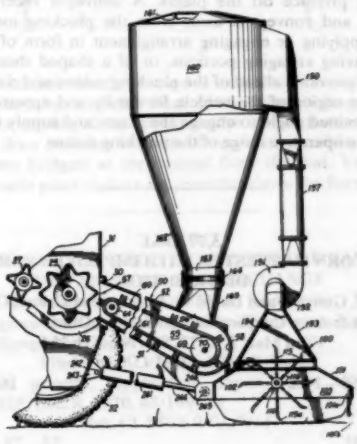
cally. Demister padding is supported between grids within the hollow body. A water spray wets the demister padding while fumes are blown through the demister padding to remove pollutants from the fumes.

3,772,859

SEED HARVESTING APPARATUS

Lawson L. Patten, 235 Valdosta Rd., Lakeland, Ga.

Filed Apr. 26, 1972, Ser. No. 247,650
Int. Cl. A01d *45/00*
U.S. Cl. 56—13.2 **10 Claims**

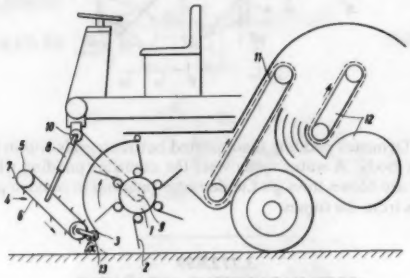


A header attachment for a self-propelled combine having threshing means wherein the header attachment includes an input feed conveyor housing having an end discharge opening which is adapted to be connected in flow communication with the combine threshing means. The header attachment includes an endless conveyor supported in the input feed conveyor housing for advancing material received through an entrance opening along an upwardly inclined housing bottom for discharge through end discharge opening into the combine threshing means. The header attachment includes rotary flail means having a plurality of flail elements operable for severing and transferring a crop to be harvested to an elevated position. Pneumatic transfer means is operatively associated with the rotary flail gathering means for transferring the severed crop from the gathering means to a cyclone separator means. The cyclone separator means includes a bottom discharge opening connected in flow communication with the input feed conveyor housing for discharging the severed crop into the input feed conveyor housing.

3,772,860
HARVESTING MACHINE

Rudiger Weiberg, Braunschweig, Germany, assignor to Maschinenfabrik August Herbold, Braunschweig, Germany

Filed Oct. 1, 1970, Ser. No. 77,264
Int. Cl. A01d 45/18
U.S. Cl. 56—13.5 7 Claims

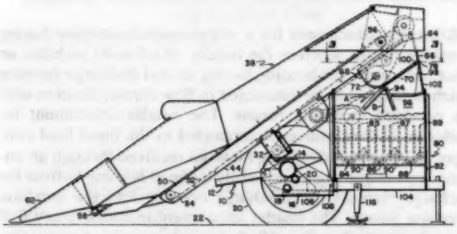


A harvesting machine for harvesting produce from plants which grow in elongated rows and are of the bush variety. A vehicle is capable of advancing longitudinally of the respective rows and carries stripping or plucking means extending transversely to the elongation of the rows and being operative for plucking produce off the plants. A conveyor receives the produce and conveys it away from the plucking means. A plant supplying or engaging arrangement in form of a conveyor having engaging portions, or of a shaped sheet-metal guide, is provided ahead of the plucking means and rises from the lower region of the vehicle forwardly and upwardly at a predetermined angle to engage the plants and supply to them within the operative range of the plucking means.

3,772,861
CORN HARVESTER WITH IMPROVED EAR DISTRIBUTION

Lyman J. Gunyou, and David W. List, both of Celina, Ohio, assignors to Avco Corporation, Coldwater, Ohio

Filed Mar. 2, 1972, Ser. No. 231,264
Int. Cl. A01d 45/02
U.S. Cl. 56—14.2 16 Claims

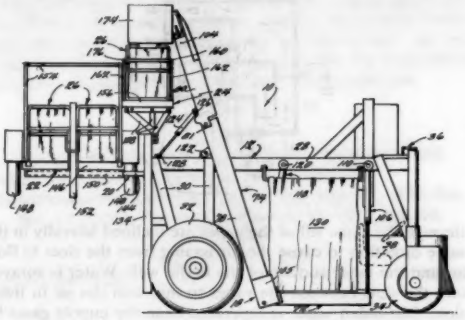


A three-row field-going corn harvester where the corn snapped from adjacent rows is distributed to a husking bed having three groups of husking rolls through separate paths, thereby improving distribution of the corn. A sheller may be positioned in place of the husker and the three flow channels are easily converted into a single discharge into the sheller.

3,772,862
APPARATUS FOR REMOVING TOBACCO LEAVES FROM ROWS OF TOBACCO PLANTS AND FOR HANDLING THE REMOVED LEAVES

Robert W. Wilson, Charlotte, N.C., assignor to Powell Manufacturing Company, Inc., Bennettsville, S.C.

Filed Mar. 29, 1972, Ser. No. 239,221
Int. Cl. A01d 45/16
U.S. Cl. 56—27.5 11 Claims

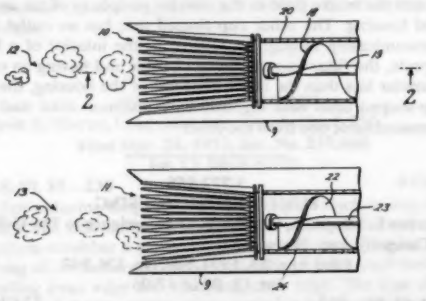


Tobacco combine apparatus including a wheeled frame adapted to be self-propelled and steered along a row of mature tobacco plants having vertically movable leaf defoliating mechanism thereon for removing tobacco leaves from the tobacco plants in the row as the frame is moved therealong, a conveyor system for conveying the removed leaves rearwardly and upwardly to a pair of laterally spaced discharge stations and a fork lift mechanism at the rear of the vehicle frame for detachably engaging a trailer vehicle assembly adapted to carry a series of baskets or bin-like structures, the fork lift mechanism functions to move the trailer from a ground engaging position to an elevated operative position rearwardly and below the discharge stations of the conveyor system where an attendant stationed on the forward central portion of the bed of the trailer moves successive empty bins from the trailer onto a pair of spaced end stations on a laterally extending platform providing a leaf loading station laterally inwardly of each end station beneath a discharge station of the conveyor system, the platform also provides a central station for receiving successive filled bins as the attendant moves successive empty bins into each loading station and from which the attendant moves filled bins onto the trailer.

3,772,863
PLANT STRIPPING APPARATUS

Henry J. Jezek, 1204 E. Downes Ave., Temple, Tex.

Continuation-in-part of Ser. No. 60,417, Aug. 3, 1970, abandoned. This application Feb. 28, 1972, Ser. No. 229,724
Int. Cl. A01d 45/18
U.S. Cl. 56—34 8 Claims



A plurality of stripping fingers for stripping cotton bolls and the like are mounted on a vehicle for movement through cot-

ton plants to strip the bolls therefrom. Located at the rear of the fingers is a conveyor that carries the bolls to a storage bin or the like. To keep the diameter of the opening to the conveyor to a minimum for a given stripping width, the fingers are mounted on the vehicle so that they fan outwardly in the direction of travel of the vehicle. This allows the fingers to strip a swath of the desired width while using a conveyor that is narrower than the width of the swath being stripped.

3,772,864

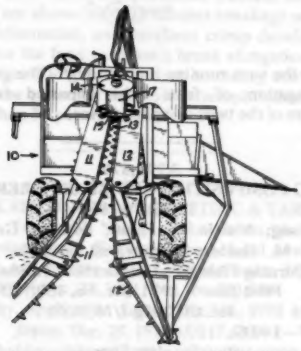
SUGAR CANE TOPPING CUTTER AND SELECTIVE CUT TOP DIRECTOR

Kenneth Rodrigue, Thibodaux, La., assignor to Cane Machinery & Engineering Company, Inc., Thibodaux, La.

Continuation of Ser. No. 247,163, April 24, 1972, abandoned. This application Mar. 5, 1973, Ser. No. 338,275

Int. Cl. A01d *45/02*

U.S. Cl. 56—63 **5 Claims**



The present disclosure is directed to a device for topping sugar cane stalks while harvesting same which provides a flat walled structure which rotates with the topping cutter to provide a flat positive knocking surface to engage the cut top and knock it to either the right or left side of the harvester. The topper drive is reversible so that cut cane tops may be knocked to either the left or right side of the harvester.

3,772,865

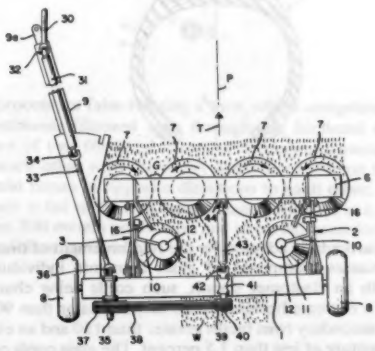
DRUM TYPE MOWER

Hermann Ruprecht, Singen, and Josef Glunk, Gottmadingen, both of Germany, assignors to Maschinenfabrik FAHR AG, Gottmadingen, Germany

Filed Mar. 6, 1972, Ser. No. 231,866

Int. Cl. A01d *57/30*

U.S. Cl. 56—192 **9 Claims**



A multidrum mower in which an array of mower drums is provided across the direction of travel of the mowing machine and a rotary windrow-forming deflecting drum is provided behind the mowing drums. Between the mowing and windrow-forming drums there is provided a guide surface which may be movable or stationary to lead the mown crop onto the rearwardly disposed drum.

3,772,866

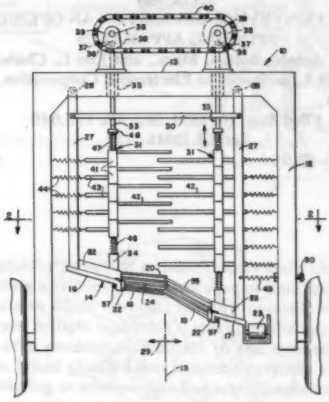
APPARATUS FOR HARVESTING GRAPES

Abdul Harry Sell, Southport, N.C., assignor to Darf Corporation, Edenton, N.C.

Filed Sept. 7, 1971, Ser. No. 178,021

Int. Cl. A01g *19/00*

U.S. Cl. 56—330 **36 Claims**



A high chassis vehicle adapted to straddle and travel along a row of plants has a catcher floor divided along its longitudinal center for passing along opposite sides of the plant row. The catcher floor includes two sets of resiliently flexible brushes which are bridged at the central floor division. Vertically reciprocable plant shakers are provided above the floor.

3,772,867

SPINNING MACHINES HAVING SPINDLE RAILS MOVABLE FOR TUBE EXCHANGE

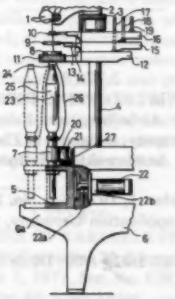
Hajime Kawakami, and Fumihiko Yamamoto, both of Kakogawa-cho, Japan, assignors to The Nippon Keori Co., Ltd., Hyogo-ken, Japan

Filed Nov. 5, 1971, Ser. No. 196,125

Claims priority, application Japan, Nov. 7, 1970, 45/098025; Dec. 8, 1970, 45/109128

Int. Cl. D01h *9/04, 9/14*

U.S. Cl. 57—52 **16 Claims**



A ring spinning machine has spindle rails selectively displaceable between an initial position, for the spinning opera-

tion, and a second position spaced outwardly from the initial position, in order to provide a very substantial clearance over the spindles for tube doffing and donning operations. The spindle rails can be displaced either in a horizontal plane or by being swung in an arc. Retractable locating means are provided to engage the spindle rails to releasably retain the same in the initial position. A tube exchanging apparatus is provided including a gripper, and the gripper need only be reciprocated along a straight line passing through the axis of a spindle in the second or outer position.

3,772,868

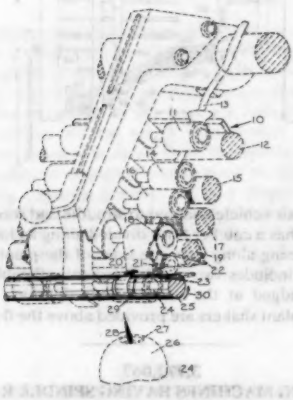
FIBER CONVEYING DEVICE FOR AN OPEN-END SPINNING APPARATUS

Richard A. Amato, Bolton, Mass., and Leo L. Chabot, Cumberland, R.I., assignors to Electrospin Corporation, Columbus, Ohio

Filed Aug. 26, 1971, Ser. No. 175,049

Int. Cl. D01h *1/12*

U.S. Cl. 57—58.95 **5 Claims**



An improved fiber conveying device for an open-end spinning apparatus in which textile fibers are adapted to be introduced from a feed point in clusters of discrete fibers into an electrostatic field which transports the fibers to a spinning device where they are twisted into yarn.

3,772,869

TWIST STOPPING DEVICE

Gunther Mutschler, Aichelberg, and Erich Scheutle, Weissenstein, both of Germany, assignors to Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung, Ebersbach, Germany

Filed Mar. 1, 1971, Ser. No. 119,580

Claims priority, application Germany, Feb. 27, 1970, P 20 09 149.0

Int. Cl. D02g *1/02*; D01h *13/08*

U.S. Cl. 57—106 **13 Claims**

The twist stopping device described comprises a freely rotatable pulley formed of two axially aligned, identically dimensioned discs which are rotatable as a unit and each of which is provided with a plurality of circumferentially spaced lugs arranged in an interlocking relationship. The lugs together define a circumferential groove in the pulley adapted

to receive the yarn running therethrough. The groove arrests the propagation of false twist imparted on the yarn downstream of the twist stopping device.

3,772,870

SIZING COMPOSITION AND GLASS FIBERS SIZED THEREWITH

Robert Wong; Martin C. Flautt, both of Granville, and Richard M. Haines, Warsaw, all of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed June 7, 1971, Ser. No. 150,723

Int. Cl. D02g *3/18, 3/36*

U.S. Cl. 57—140 G **1 Claim**

A sizing composition for glass fibers is provided, comprising polyvinyl acetate, water dispersible epoxy resin and numerous lubricants, herein the sized glass fibers are used in fiber optics for the transmission of light or images from one point to another, which sizing enables further processing of the glass fibers without substantial loss in transmission.

3,772,871

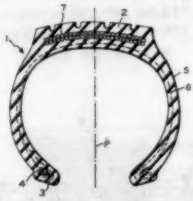
GLASS REINFORCEMENT CORDS

Raymond Guyot, Paris, France, assignor to Fiveral Societe Civile d'Etudes et de Recherches, Paris, France

Division of Ser. No. 89,293, Nov. 13, 1970, Pat. No. 3,690,363. This application Mar. 17, 1972, Ser. No. 235,551

Int. Cl. D02g *3/48, 3/18, 3/26*

U.S. Cl. 57—140 G **2 Claims**



Cords, particularly adapted for the reinforcement of tires as radial carcasses, composed of glass filaments individually coated with an elastomer sheath, such cords being characterized by a corrected primary twist factor greater than 90, a corrected secondary twist factor greater than 130 and an elongation at rupture of less than 3.5 percent. The glass cords constituting the radial carcass are preferably interrupted under the breaker of the tire at the level of the equatorial plane

forming two half carcasses which are substantially symmetrical. A substructure reinforcement layer may be placed under the breaker under the ends of such two half carcasses, the reinforcing layer having a width at least equal to the distance that separates the two half carcasses.

3,772,872

POLYESTER YARN FOR DRAW-TEXTURING PROCESS

Matteo J. Piazza, and Cecil E. Reese, both of Kinston, N.C., assignors to E.I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 235,309, March 16, 1972, abandoned. This application Mar. 27, 1973, Ser. No. 345,312

Int. Cl. D02g *3/02, 3/24, 3/44*

U.S. Cl. 57—140 R **5 Claims**

Multifilament polyester feed yarn for false-twist texturing by combined draw-texturing processes wherein heat-setting temperatures are above 200°C. Filament breakage or fusion is substantially eliminated, and excellent crimp development is obtained, when the feed yarn has a break elongation of 70 to 180 percent, has a low interfilament boundary coefficient of friction, and the polyester is ethylene terephthalate polymer which is less than 30 percent crystalline.

3,772,873

PROCESS FOR FALSE-TWISTING A YARN

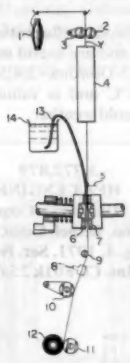
Hazime Hino, Takatsuki; Nobuji Asaka, Suita; Masuo Tsuge, Ibaragi; Sadao Tsuda, Takatsuki, and Naoki Arai, Ibaragi, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Dec. 22, 1971, Ser. No. 210,816

Claims Priority, application Japan, Dec. 24, 1970 45/118,372, Japan, Dec. 25, 1970 45/117,552

Int. Cl. D02g *1/02*

U.S. Cl. 57—157 TS **8 Claims**



A process for false-twisting a yarn, which comprises passing a continuous filament yarn through the frictional engaging surface of two frictional rotors of the same diameter which face each other with the rotary shafts not being on the same axis and rotate in opposite directions to each other, wherein the yarn is fed to the frictional engaging surfaces at a speed of at least 500 meters per minute and imparted a tension defined by the following formula

$$0.85 > F_1 > 6.35 \times 10^{-4} V - 0.100$$

wherein F_1 is the tension of the yarn in grams per denier, and V is the speed of feeding the yarn in meters per minute, in a twisting zone, and then the yarn is withdrawn from the frictional engaging surfaces.

3,772,874

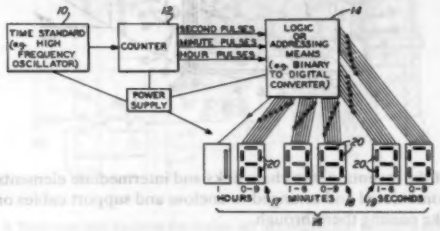
DISPLAY APPARATUS AND CHRONOMETER UTILIZING OPTICALLY VARIABLE LIQUID

Issai Lefkowitz, Princeton, N.J., assignor to Princeton Materials Science, Inc., Princeton, N.J.

Filed Dec. 9, 1971, Ser. No. 206,473

Int. Cl. G04b *19/24, 19/30*

U.S. Cl. 58—50 R **119 Claims**



Apparatus for providing a visible display and a chronometer for providing a visible display indicative of time, including optically variable liquid normally in a first optically visible state (transparent or light scattering), and upon the application or removal of a predetermined field to the optically variable liquid, the liquid changes into a second optically visible state (light scattering or transparent) and scatters received incident light and provides a visible display; in the application of a chronometer, the predetermined fields are developed from pulses or signals related to or indicative of time, e.g. seconds, minutes, hours, and/or days. In various embodiments optically variable liquid is disposed between a transparent electrode and reflecting electrodes and the reflecting electrodes reflect light received through the transparent electrode and the optically variable liquid when in a transparent state and provide a first optically visible state, and upon the optically variable liquid assuming the light scattering state in response to the application of pulses or signals to the transparent and reflecting electrodes, the reflecting electrodes are at least partially obscured thereby providing a second optically visible state. Also, in various embodiments, the pulses or signals providing the electric fields are provided by shift registers and the shift register stages are formed in a predetermined geometric pattern in particular portions of a body of semiconductive material and the reflecting electrodes are formed on the body of semiconductive material in substantially the same predetermined geometric pattern and the reflecting electrodes are electrically associated with the shift register such as by being formed on the body of semiconductive material in direct engagement with the particular portions in which the shift register stages are formed, or are electrically associated by lands formed on the body of semiconductive material electrically interconnecting the shift register stages and the reflecting electrodes. In other embodiments chronometers are disclosed including digital time read-out displays, analog time read-out displays, analog-digital time read-out displays, and displays structured in various physical configurations.

3,772,875

CHAIN LINK OF VARIABLE PITCH

Luigi Viano, Via Corado Corradini 20, Moncalieri, Italy

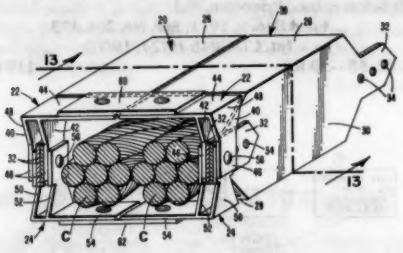
Filed Sept. 7, 1971, Ser. No. 178,329

Int. Cl. F16g *13/16*

U.S. Cl. 59—78.1 **5 Claims**

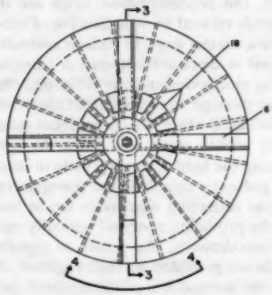
A chain link wherein the pitch and thus the radius of curvature of the chain formed of the links is variable by changing the distances between the pivot points of the chain links. Auxiliary intermediate elements are provided for keeping the

chain in a horizontal position when traveling to convey tubes, cables and the like, and in accordance with the preferred form



of the invention, the chain links and intermediate elements are constructed and arranged to enclose and support cables or the like passing therethrough.

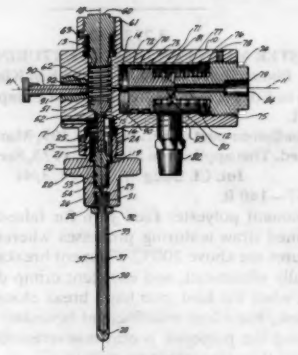
3,772,876
RECIPROCATING THERMAL ENGINE
Paul Slysh, San Diego, Calif., assignor to General Dynamics Corporation, San Diego, Calif.
Filed May 24, 1971, Ser. No. 146,344
Int. Cl. F03g *7/06*
U.S. Cl. 60—529 **11 Claims**



A reciprocating thermal engine which converts heat energy into rotational mechanical motion by expansion and contraction of bimetallic elements. The bimetallic elements are cantilevered between a hot plate and a cold plate, and the bimetallic elements reciprocate due to alternate heating and cooling. This reciprocating motion is converted to rotational motion by means of cam followers acting on cam surfaces.

3,772,877
TEMPERATURE RESPONSIVE ACTUATOR
Harry Friedland, Las Vegas, Nev., assignor to Process Systems, Inc., Las Vegas, Nev.
Filed Feb. 4, 1971, Ser. No. 112,754
Int. Cl. F03g *7/06*
U.S. Cl. 60—531 **10 Claims**

An elongated filler rod is disposed inside an enclosed hollow elongated probe. The filler rod is spaced from the probe to form an annular cavity that is partially filled with a volatile liquid having a higher heat capacity per unit volume than the filler. The temperature of the liquid is indicated by a movable member that is responsive to the vapor pressure of the liquid in the cavity. A flange at one end of the filler rod serves as a seal at the threaded connection between the probe and the housing for the movable member. First and second actuating stages are connected in tandem. The first actuating stage is

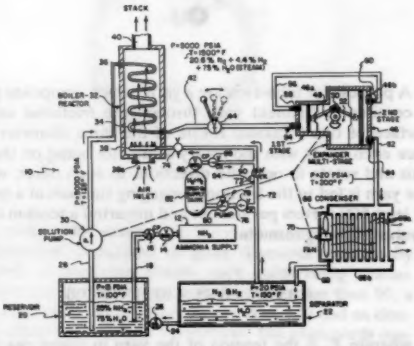


triggered by the movable member and the second actuating stage is triggered by the first actuating stage. Each stage has a snap-action operation accelerated by a rapid change in fluid pressure. The second stage has to be reset before it can be triggered again.

3,772,878
METHOD OF GENERATING POWER
Max F. Bechtold, Kennett Square, Pa., and Walter Mahler, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Feb. 29, 1972, Ser. No. 230,482
Int. Cl. F01k *25/00*
U.S. Cl. 60—36 **4 Claims**

The isomers of dibromotrifluorobenzenes have a boiling point of about 205°C and are useful as working fluids in Rankine-cycle engines. 1,3-Dibromo-2,4,5-trifluorobenzene has a melting point of −41°C and is valuable for use in engines which are exposed to cold weather.

3,772,879
HEAT ENGINE
Richard E. Engdahl, Danbury, Conn., assignor to Energy Research Corporation, Bethel, Conn.
Filed Aug. 4, 1971, Ser. No. 168,865
Int. Cl. F01k *25/08*
U.S. Cl. 60—37 **29 Claims**



A pollution-free heat engine using a working fluid containing ammonia, including first means for heating and pressuriz-

ing the working fluid to a level of temperature and pressure whereat chemical dissociation or cracking of the ammonia into nitrogen and hydrogen takes place. Second means is provided for burning at least a portion of said cracked hydrogen as fuel for supplying part of the heat required in said first means.

3,772,880

METHOD AND APPARATUS FOR REGULATING FUEL FLOW OF A GAS TURBINE ENGINE

Seishi Kubota, Yokosuka, and Takashi Kunugi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed July 23, 1971, Ser. No. 165,050

Claims priority, application Japan, Sept. 14, 1970, 45/80652

Int. Cl. F02c *9/05*

U.S. Cl. 60—39.02 **3 Claims**

A method and an apparatus for regulating a flow rate of a fuel to be supplied to a gas turbine engine, the fuel flow rate being regulated in accordance with an atmospheric pressure, an atmospheric temperature and a revolution speed of the engine for preventing the engine from misfiring and surging otherwise occurring due to inappropriate supply of fuel to the engine.

3,772,881

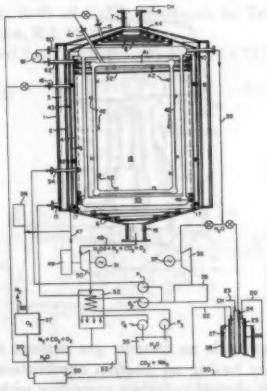
APPARATUS FOR CONTROLLABLE IN-SITU COMBUSTION

Hans Lange, Wietze, Germany, assignor to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

Division of Ser. No. 43,547, June 4, 1970, Pat. No. 3,700,035. This application Feb. 23, 1972, Ser. No. 228,677

Int. Cl. F02c *7/02*

U.S. Cl. 60—39.18 B **6 Claims**



A system of apparatus for controllable in-situ combustion in subterranean hydrocarbon bearing formations containing bitumens with simultaneous production and recovery of energy sources supplying the mechanical and thermal energy required for the in-situ combustion and operation of the facilities involved.

3,772,882

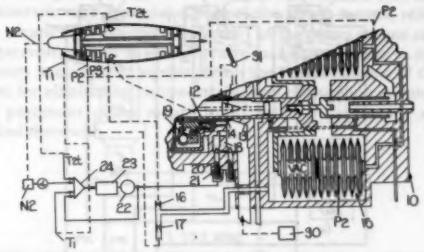
FUEL CONTROL SYSTEMS FOR GAS TURBINE ENGINES

Eugene Harold Warne, Markgroningen-Talhausen, Germany, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 2, 1971, Ser. No. 204,107

Int. Cl. F02c *9/08*

U.S. Cl. 60—39.28 T **15 Claims**



A fuel control system includes an acceleration control sensitive to a plurality of engine parameters means sensitive to a so-called hot re-slam condition of the engine and producing an electrical output and means actuable by this output to reduce the maximum fuel flow to the engine.

3,772,883

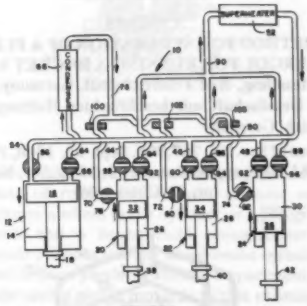
MULTI-CYLINDER EXTERNAL COMBUSTION POWER PRODUCING SYSTEM

John Gordon Davoud, and Jerry A. Burke, Jr., both of Richmond, Va., assignors to D-Cycle Associates, Richmond, Va.

Continuation-in-part of Ser. No. 58,099, July 24, 1970, abandoned. This application June 13, 1972, Ser. No. 262,175

Int. Cl. F01k *25/00, 23/00*

U.S. Cl. 60—94 **12 Claims**



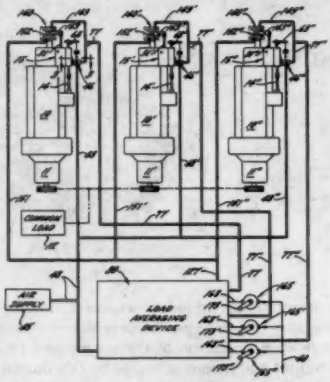
In an external combustion power producing system, a condensable fluid is heated to a vapor state and such heated vapor is separated into at least two portions without changing the state thereof as regards temperature, pressure, entropy, enthalpy, or its specific volume. One portion is expanded isentropically to a lower pressure in non-compression, expansion-only cylinder and is removed entirely from such cylinder and passed to a condenser. The other portion is expanded isentropically in a companion series of expansion and compression cylinders to which, in liquid form, the weight equivalent of the condensed portion of the fluid is introduced so as to be added to the other portion of the fluid. In such cylinders, the mixture is compressed isentropically to the maximum working pressure. Thereafter, the compressed fluid is reheated and reexpanded in accordance with the foregoing to complete the power producing cycle.

3,772,884

LOAD EQUALIZING CONTROL FOR MULTIPLE UNIT POWER PLANTS

Ronald L. Witt, Rockford, Ill., assignor to Woodward Governor Company, Rockford, Ill.

Filed July 27, 1972, Ser. No. 275,500
Int. Cl. F01b 25/00
U.S. Cl. 60—97 R 10 Claims



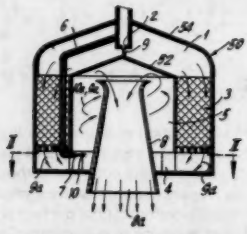
The fuel regulators of a plurality of prime movers driving a common load are positioned by individual combined speed and load regulating governors whose load settings are adjusted automatically in accordance with differences between pressure signals corresponding to the prevailing loading of the respective prime movers and a pressure signal corresponding to the average of the loads on all of the prime movers. To obtain the average load signal, the individual load signals are added and the sum is used to actuate a valve to produce a pressure which is exerted on a valve in opposition to the load signals and which corresponds to the average of the prime mover loads prevailing at any time.

3,772,885

METHOD FOR SEPARATION OF A FLUID MONERGOL FOR RUNNING A ROCKET MOTOR

German Mundling, Bad Friedrichshall, Germany, assignor to Bolkow Gesellschaft mit beschrankter Haftung, Ottobrum bei Munich, Germany

Division of Ser. No. 767,906, Sept. 23, 1968, Pat. No. 3,500,861. This application July 2, 1970, Ser. No. 60,967
Int. Cl. C06d 5/08
U.S. Cl. 60—207 8 Claims



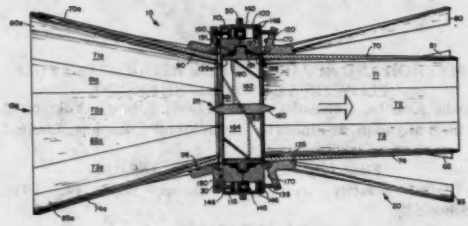
A method for the separation of a fluid Monergol in order to run a gas generator especially for rocket motors comprises dividing the fluid Monergol mass into a plurality of separate Monergol partial masses, separating one of the masses catalytically in an atomized state, and mixing another of the monergol partial masses in an atomized state with the hot decomposed gases of the first Monergol partial mass which is generated as it is separated catalytically so as to thermally split the second fluid Monergol partial mass.

3,772,886

APPARATUS FOR WATER JET PROPULSION

Donald L. Cameron, 2213 Roosevelt Ave. No. 2, Richmond, Calif.

Filed July 1, 1970, Ser. No. 51,450
Int. Cl. B63h 11/10
U.S. Cl. 60—221 4 Claims



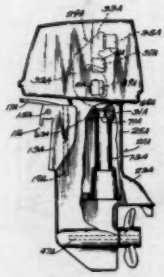
Apparatus for water jet propulsion in which a screw propeller is integrally formed with a surrounding duct, which surrounding duct rotates with the screw propeller to eliminate blade-tip vortex. A duct comprised of alternately disposed movable and stationary segments, which movable elements are adjustably positioned to mate with the stationary segments to provide optionally either an intake duct with an optimum configuration to reduce cavitation or a discharge duct with an optimum configuration.

3,772,887

EXHAUST SYSTEM FOR THREE CYLINDER ENGINE

Kurt F. Ziegler, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed July 18, 1972, Ser. No. 272,762
Int. Cl. F01n 7/10; B63h 21/26
U.S. Cl. 60—313 13 Claims

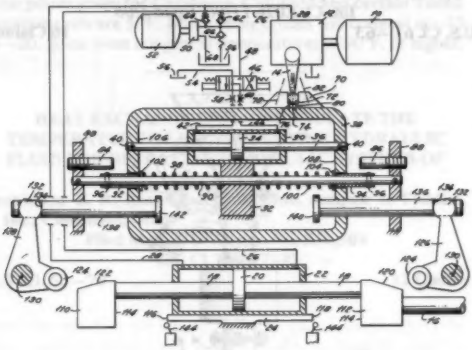


Disclosed herein is an exhaust gas passage system for an outboard motor having an internal combustion engine with three vertically aligned cylinders extending with their axes in the fore and aft direction, which exhaust gas passage system advantageously occupies a minimum of width and includes three branch passages which respectively extend forwardly from the three exhaust ports and along one side of the engine, which merge into a forwardly located common duct or exhaust gas passage, and which have equal acoustical lengths between all of the cylinders and the common exhaust gas passage.

3,772,888
HYDROSTATIC TRANSFER DRIVE

John B. Orlando, Warren, Mich., assignor to F. Jos. Lamb Company, Warren, Mich.

Filed July 27, 1972, Ser. No. 275,785
Int. Cl. F16h *39/46*
U.S. Cl. 60—444 18 Claims

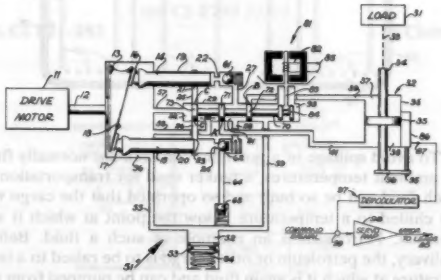


A hydrostatic drive for reciprocating the transfer bar of a multi-station transfer mechanism wherein the motive power is supplied by a swashplate type pump, the control arm of which is pivoted to accelerate and decelerate the transfer bar by means of a yoke connected to the end of the control arm and adapted to be displaced by a control cylinder supplied with pressure fluid from an auxiliary pump through a four-way solenoid operated, spring centered valve. When the valve is in the centered position the yoke is spring biased toward a centered position, thus shifting the control arm of the swashplate pump to the neutral position so that the transfer bar can at any point between the ends of its stroke be stopped with a controlled rate of deceleration and again started with a controlled rate of acceleration.

3,772,889
SERVO PUMP HAVING THROTTLED INPUT

Rickard K. Mason, Granada Hills, and John M. Roark, Canoga Park, both of Calif., assignors to Textron, Inc., Providence, R.I.

Filed June 16, 1971, Ser. No. 153,721
Int. Cl. F15b *15/18*
U.S. Cl. 60—473 3 Claims



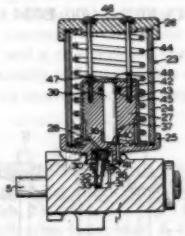
A fluid flow control system for moving a load positioning member which system utilizes a closed hydraulic system of predetermined capacity including a reservoir. A continuously running fixed displacement pump means having inlet and outlet ports is connected to receive fluid from the reservoir and to transmit the fluid to the load positioning means. Control valve means is disposed to control the amount of fluid flow to the pump means and to direct the flow from the pump means to the load positioning member. Control means is connected to the control valve means to position the control valve means responsive to received signals to properly position the valve means respective to the inlet and outlet ports of the pump means thereby to effect the desired rate of flow.

There may be also included make-up valve means between the reservoir and the intake port of the pump means, relief valve means between the output port of the pump means and the reservoir, as well as shut-off valve means responsive to discrepancy in compared signals within the control means of the system for eliminating control of the load positioning member by a particular pump means and control valve means associated therewith.

3,772,890
PRESSURE LIMITING DEVICE FOR VEHICULAR BRAKE SYSTEMS

Johannes Altmeppen, Ronnenberg, Germany, assignor to Westinghouse Bremsen-und Apparatebau GmbH, Hannover, Germany

Filed July 25, 1972, Ser. No. 274,859
Claims priority, application Germany, Sept. 28, 1971, P 21 48 235.9
Int. Cl. F15b *7/08*
U.S. Cl. 60—585 1 Claim



The invention deals with a pressure limiting device for fluid pressure brakes of road vehicles with at least one main cylinder to activate a wheel brake cylinder or a group of wheel brake cylinders and a brake fluid compartment placed between the main cylinder and the wheel brake cylinder or the group of wheel brake cylinders, which compartment is made up of a cylinder and a piston movable in this cylinder by the brake cylinder pressure acting on this piston against the force of a prestressed spring.

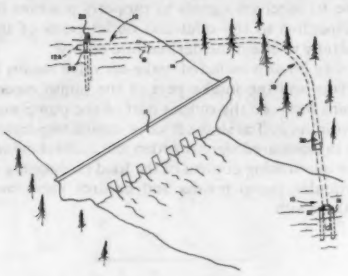
3,772,891
CONDUIT STRUCTURE FOR MIGRATING FISH

John E. Raistakka, 1414 S.W. 12th Ave., Portland, Oreg.

Filed Oct. 20, 1971, Ser. No. 191,045
Int. Cl. E02b *8/08*
U.S. Cl. 61—21 2 Claims

A conduit for the passage of fish about a dam or other obstruction with the end segments of the conduit being vertically positionable by winch means to best suit migrating fish. The conduit ends are in submerged placement upstream and downstream from the dam or obstruction with the main portion of the conduit being of a constant gradient to facilitate

fish passage. Baffle means are spaced along the conduit interior to cause the water flow therethrough to be in an eddying



manner to provide a series of resting zones for the migrating fish. Means are provided for adding a fish attracting substance to the conduit flow.

3,772,892

PROCESS OF INSTALLING COMPACTED SAND COLUMNS IN THE GROUND

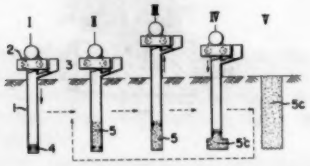
Mitsuro Ogawa, 31, 1-Chome, Tanabehonmachi Higashisumiyoshi-ku, Osaka, Japan

Filed June 9, 1972, Ser. No. 261,540

Claims priority, application Japan, Sept. 18, 1971, 46/72882

Int. Cl. E02b *11/00*; E02d *3/08*

U.S. Cl. 61—35 **17 Claims**



Process of installing compacted sand columns in the soft ground wherein the underground depth at the lower end of the casing pipe, the discharged sand volume and the strength of the original or stabilized ground are continuously detected, recorded, indicated in the operation meter and controlled as viewed from the design.

3,772,893

SOIL SEALING METHOD

Louis H. Eilers, Inola, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 7, 1972, Ser. No. 260,598

Int. Cl. E02d *19/16*

U.S. Cl. 61—36 R **9 Claims**

A mixture of soil, expanding lattice clay and a linear water soluble organic polymer solid is compacted in an area desired to be sealed to provide an effective seal against water penetration.

3,772,894

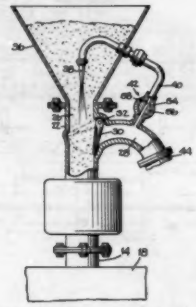
INSTALLATION OF SAND DRAINS

Augustus P. Godley, Hohokus; Francis M. Fuller, Washington Township, Bergen County; Charles R. Houk, Scotch Plains; Henry A. Nelson Holland, Ridgewood, and George J. Gendron, Oradell, all of N.J., assignors to Raymond International, Inc., New York, N.Y.

Division of Ser. No. 872,793, Aug. 25, 1969, Pat. No. 3,641,775. This application Dec. 8, 1971, Ser. No. 206,218

Int. Cl. E02b *11/00*; E02d *3/08*

U.S. Cl. 61—63 **16 Claims**



Formation of sand drains in the earth by drilling and forcing a fluid at high velocity to wash out a hole and thereafter filling the hole by forcing filler material down through a pipe; the pipe being outfitted with special valve control means to control the flow of fluid and filler therethrough in generally inverse manner.

3,772,895

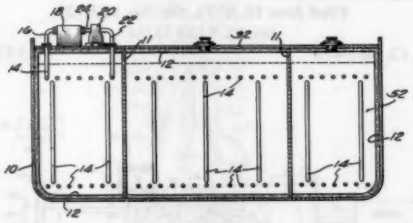
REFRIGERATION TO AVOID CONTAMINATION BY A HYDROCARBON

John Carl Abendroth, 4238 W. Hawthorne Trace Rd., Milwaukee, Wis.

Filed Oct. 26, 1971, Ser. No. 192,655

Int. Cl. F25c *7/00*

U.S. Cl. 62—46 **11 Claims**



To avoid spillage of a potential contaminant normally fluid at ambient temperatures, a tanker used for transportation of such fluid will be so built and so operated that the cargo will be chilled to a temperature below the point at which it will congeal. Petroleum is an example of such a fluid. Before delivery, the petroleum or other cargo is to be raised to a temperature at which it is again fluid and can be pumped from the storage tanks in which it has been transported. From a method standpoint, a series of tankers can be served by a single high capacity refrigeration device at the port of embarkation, each tanker requiring, therefore, only minimum refrigeration equipment to maintain the paraffin-congealing temperature during transit. Similarly a single high capacity heating system

will serve a succession of tankers to restore the contents to fluidity as a port of debarkation.

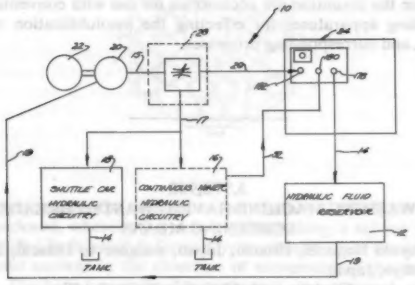
By way of example, the cargo is assumed to comprise petroleum such as crude oil. Most hydrocarbon oils contain substantial quantities of paraffin and may, therefore, be congealed. In the case of crude oil, the temperature below which the oil cannot be poured will ordinarily range no lower than −70°F. Most are well above that temperature. A text book gives the pour point of Pennsylvania crude oil at 4.°F. The pour points given for Oklahoma, Colorado and certain Texas-Louisiana oils are 5.°F. Many other crudes will congeal at −15 or −20. Some even congeal at temperatures of 90°F. or higher.

3,772,896

HEAT EXCHANGE UNIT TO REGULATE THE TEMPERATURE OF RECIRCULATING HYDRAULIC FLUID FOR OPERATING HYDRAULIC SYSTEMS OF MACHINERY

Prabhakar B. R. Rao, Cincinnati, Ohio, assignor to Fluidics, Inc., Cincinnati, Ohio

Filed Mar. 2, 1972, Ser. No. 231,509
Int. Cl. F25b *7/00*
U.S. Cl. 62—79 **12 Claims**



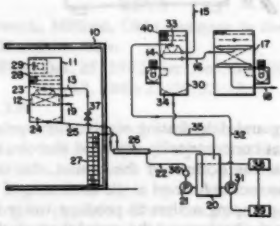
A heat exchange unit to maintain the temperature of an aqueous non-toxic and non-flammable hydraulic fluid supplied from a reservoir to enclosed hydraulic systems of machinery used in confined areas, such as mines and the like, within a desired temperature range.

3,772,897

DEFROSTER FOR A REFRIGERATING SYSTEM

Fujio Masuda, Tokyo, Japan, assignor to Sakura Refrigerating & Heating Engineering Co., Ltd., Tokyo, Japan

Filed Sept. 13, 1972, Ser. No. 288,666
Claims priority, application Japan, Mar. 21, 1972, 47/27494
Int. Cl. F25d *21/10*
U.S. Cl. 62—282 **3 Claims**



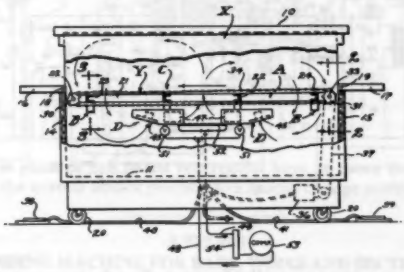
A defroster removes a frost deposited onto an evaporator of a refrigerating system. The defroster is so constructed that an anti-freezing solution preliminarily introduced and cooled within the refrigerating box of the system is sprayed onto the frost to lower the fusing point thereof and the anti-freezing solution diluted by the frost is sprayed onto the heat radiating coil member of the system to cause the water contained in the solution to be evaporated, thus increasing its concentration.

3,772,898

FREEZER WITH REMOVABLE CONVEYOR AND REFRIGERATING MEANS

William G. Anderson, 5942 Gildred Cir., Huntington Beach, Calif.

Filed Feb. 10, 1972, Ser. No. 225,103
Int. Cl. F25d *23/12*
U.S. Cl. 62—302 **7 Claims**



An open ended freezing cabinet housing a motorized conveyor upon which articles to be chilled are transported through a frost producing environment, there being complementary refrigerating units disposed so as to recirculate air through the cabinet without discharging the same, and there being a chassis that removeably carries the conveyor and said refrigerating units, and a refrigeration compressor and conveyor controls universally remote from the cabinet for supplying refrigerant and for conveyor control respectively.

3,772,899

SEAMLESS BRASSIERES AND BRASSIERE BLANKS

Giuseppe Novi, Via della Republica 15, Pontedera, Italy

Filed Feb. 23, 1971, Ser. No. 118,016
Claims priority, application Italy, Mar. 4, 1970, 45208 A/70; Sept. 7, 1970, 45216 A/70
Int. Cl. A41b *9/06*
U.S. Cl. 66—176 **9 Claims**

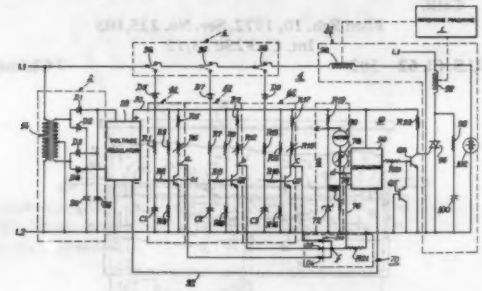
There is described an article adapted for ready deformation into a brassiere defining blank generally including a longitudinally knit seamless tubular artefact having successively knit portions of varying diameters in adjacent portions. The tubular artefact is preferably knit longitudinally on a circular knit hosiery machine. Deformation may be effected by use of a wire form which is inserted longitudinally within the tubular knit article thus flattening the article into two superimposed layers with a portion of the periphery of the wire defining the upper and lower edges desired for the cups of the blank. Three dimensional forms inserted within the periphery shapes the bust areas to three dimensions.

3,772,900

TEMPERATURE CONTROLLER FOR FLUID IN AN APPARATUS HAVING A PLURALITY OF OPERATION CYCLES

Charles L. Hopkins, Norwood, Ohio, assignor to McGraw-Edison Company, Elgin, Ill.

Filed Mar. 2, 1972, Ser. No. 231,137
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R 7 Claims



A temperature controller for controlling the temperature of water in a washing machine during each one of the operation cycles of the washing machine. A separate circuit for each operation cycle of the machine is provided for producing a signal representative of a selected water temperature during that cycle. A single temperature indicating device indicates the water temperature during each one of the cycles and a single thermistor circuit produces a signal representative of the actual water temperature during each one of the cycles. The signal from the temperature selection circuit and the thermistor circuit is applied to a comparison means which produces an output signal dependent on a predetermined relationship of the two input signals and causes water of a temperature required to reach desired water temperature to be added to the washing machine. A programmer selects the cycle in which the washing machine is to operate and also actuates the temperature selection circuit which is to control the water temperature of the operation cycle selected. Actuation of any one temperature selection circuit produces an output which blocks any output from the other temperature selection circuits to the comparison means so that there will be no interference with the comparison of the signal from the actuated temperature selection circuit and the signal from the thermistor circuit.

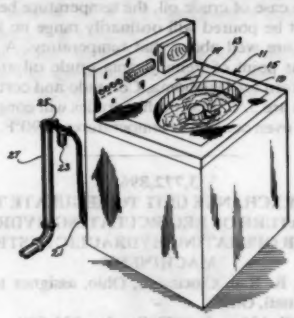
3,772,901

WASHING APPARATUS INCLUDING MEANS FOR REMOVAL OF PHOSPHATES FROM THE WASHING SOLUTION

Joseph George Ferraro, Wyckoff, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 11, 1971, Ser. No. 152,312
Int. Cl. D06f *39/10*
U.S. Cl. 68—18 F 8 Claims

A washing machine or dishwasher includes means for admixing with waste wash water a suitable chemical compound to convert the soluble phosphate in the wash water to insoluble form before discharge of the waste solution to a sewer, drain or other means of disposal. Among the useful chemical compounds employed are calcium chloride, calcium hydroxide and aluminum sulfate, which convert soluble phosphates, including tripolyphosphate and pyrophosphate salts, to insoluble materials, which may be removed from the effluent. Also



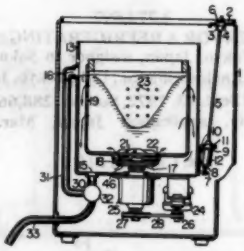
within the invention are accessories for use with conventional washing apparatuses for effecting the insolubilization reaction, and corresponding processes.

3,772,902

WASHING MACHINE HAVING WASTE THREADS SCREENING MEANS

Haruyuki Noguchi, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed June 12, 1972, Ser. No. 262,158
Claims priority, application Japan, June 14, 1971, 46/41715
Int. Cl. D06f *17/10, 39/10*
U.S. Cl. 68—18 F 6 Claims



In a washing and dehydrating machine comprising a vessel having a basket concentrically arranged therein, and a pulsator disposed at the bottom of the basket, the improvement comprises vane means formed at the back side of the pulsator for providing pumping action to produce water flow from a space between the basket and the vessel through the back side of the pulsator into the basket, and screen-like filter means provided below the pulsator and covering perforations formed in the basket so as to remove waste threads separated from clothings during washing.

3,772,903

APPARATUS FOR CONTINUOUS WET TREATMENT OF A TEXTILE WEB

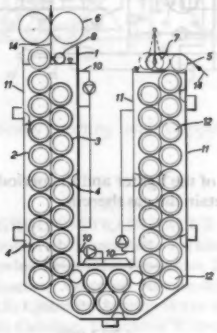
Peter Schroeder, Arni, Switzerland, assignor to Paul Weber A.G., Rothrist, Switzerland

Continuation-in-part of Ser. No. 14,361, Feb. 26, 1970, Pat. No. 3,690,814. This application Aug. 23, 1972, Ser. No. 283,042

Claims priority, application Switzerland, Feb. 28, 1969, 3017/69

Int. Cl. B05c *3/136*

U.S. Cl. 68—62 6 Claims



Apparatus for the continuous wet treatment of a textile web is disclosed, wherein the web is guided along a zig-zag path through a bath which is formed by treatment liquid flowing in counter current to the direction of movement of the textile web. The bath is contained in a channel shaped vessel, and a plurality of perforated deflecting rollers are positioned within the vessel and form between them a zig-zag-like path for guiding the textile web through the vessel and thus through the bath in meander-like manner. Nozzles are located within the vessel adjacent one of said rollers, the nozzles having a slot-like discharge opening which, when a textile web moves through the vessel, extends above the web and over substantially the entire width of the web. The discharge opening of the nozzle discharges treatment liquid in the form of a jet-like stream which impinges against the web in a direction substantially perpendicular to the plane of the web and to the axis of the roller beneath the web, while forming an acute angle with the longitudinal axis of the channel shaped vessel with the open side of the acute angle pointing in the direction in which the web is withdrawn from the vessel.

3,772,904

LOCK WITH CHANGEABLE GUARD AND LOCKING KEYS

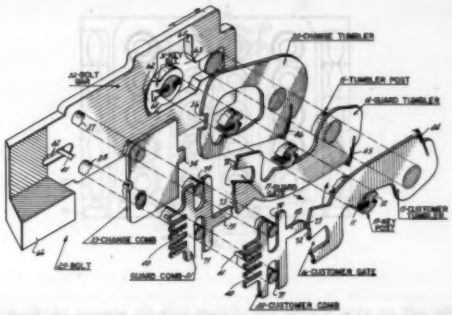
Joseph J. Parrock, Milford, Ohio, assignor to the Mosler Safe Company, Hamilton, Ohio

Filed Oct. 25, 1972, Ser. No. 300,470

Int. Cl. E05b *25/00, 35/12*

U.S. Cl. 70—339 12 Claims

A two key lever tumbler lock with at least two sets of tumblers alignable to interfit respectively with at least two sets of combs. The combs move with the bolt, and the two tumbler sets must be aligned with them by the concurrent use of two keys, operating in opposite directions upon the two sets of tumblers, to permit withdrawing the bolt. When the bolt is extended the combs of the first and second sets are fixed with respect to it, but when the bolt has been withdrawn to a certain position, both sets of combs are freed so that their positions can be changed by the use of new keys that shift the combs by acting upon the tumblers with which the combs are respectively interfitted. Third sets of tumblers and combs may be provided, in order to require the use of a third or change key in place of one of the two regular keys, to move the bolt past the normal unlock position to a special change position.



3,772,905

BENDING MACHINE FOR BARS, WIRES AND SECTIONS

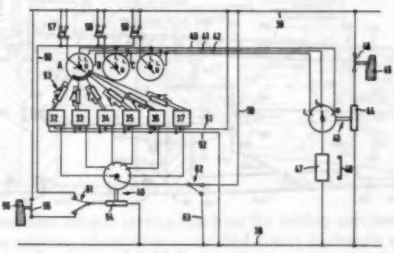
Carl Ullrich Peddinghaus, Obere Lichtenplatzer Strasse 276, Wuppertal-Barmen, Germany

Filed June 1, 1971, Ser. No. 148,748

Claims priority, application Germany, June 1, 1970, P 20 26 639.1

Int. Cl. B21j *7/26*

U.S. Cl. 72—22 9 Claims



A bending machine for bars in which there are provided bending angle circuits corresponding to the main bending angles, and a programme store circuit with a number of storage locations greater than the number of the main bending angles, with the bending angle circuits being connectible to the programme store circuit to follow programmes stored therein, with the programme store circuit being arranged to switch progressively at each switching step by one storage location.

3,772,906

IMPRESSION DIE FORGING METHOD AND APPARATUS

Robert H. Dorton, Box 122, Eaton, Ind.

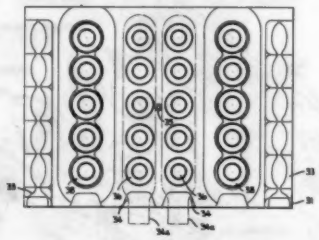
Filed Sept. 11, 1972, Ser. No. 288,119

Int. Cl. B21j *13/02*

U.S. Cl. 72—374 6 Claims

Disclosed is a method of impression die forging in which one or both of the opposed dies carry an even number of progressive die impressions on their face with the dies being identically paired. Each member of each impression pair is

spaced equally on opposite sides of the center line of forging energy application (the center of the die face). The method



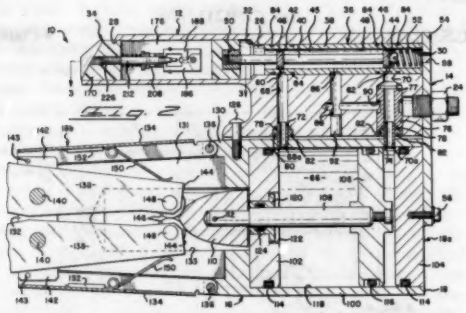
requires simultaneous presentation of workpieces in both die impressions of at least one of the spaced impression pairs.

3,772,907

CRIMPING TOOL HAVING AN IMPROVED VALVE CONTROL MECHANISM

George William Rider, Harrisburg, Pa., assignor to A M P Incorporated, Harrisburg, Pa.

Filed Feb. 22, 1972, Ser. No. 227,813
Int. Cl. B21d *7/06*
U.S. Cl. 72—412 6 Claims



This invention pertains to fluid-driven crimping tool and more particularly to a valve control mechanism having a barbed and tipped shaft and locking jaws whereby the jaws permit advancing motion of the shaft but denies retraction thereof until the jaws are forced apart by engagement thereof by the shaft tip. This latter action allows a sleeve to advance between the barbs and the locking jaws, remaining in such protective position until the barbs and shaft are retracted from the locking jaws.

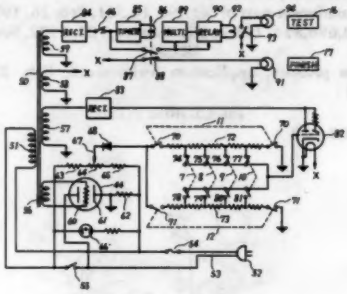
3,772,908

GAS LIGHTER TESTING DEVICE

Riichiro Kasahara, Kobe, Japan, assignor to Shin Cosmos Deaki Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 6,992, Jan. 30, 1970. This application June 4, 1971, Ser. No. 150,033
Claims priority, application Japan, Feb. 6, 1969, 44/10313
Int. Cl. G01m *3/26*; G01n *31/06*
U.S. Cl. 73—27 R 4 Claims

A testing device for gas lighters having a container for holding the lighter, a gas detecting element within the container and an associated electric circuit including indicating means, said circuit having voltage control means to compensate for



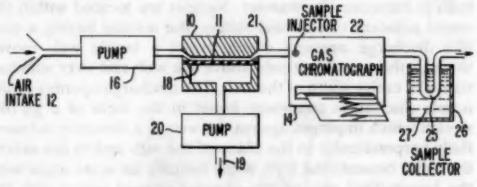
the gas volume of the lighter and the period of time the lighter is required to retain the gas therein.

3,772,909

APPARATUS FOR ANALYZING ENVIRONMENTAL GASES

Weston A. Anderson, Palo Alto, Calif., assignor to Varian Associates,, Palo Alto, Calif.

Continuation-in-part of Ser. No. 707,613, Feb. 23, 1968, abandoned. This application Aug. 2, 1971, Ser. No. 168,239
Int. Cl. G01n *31/08*
U.S. Cl. 73—23.1 8 Claims



A chromatographic system is disclosed which enables the analysis of an ambient or other gaseous medium using the gaseous medium itself, in a purified form, as the system carrier fluid. Ambient gases are continuously drawn into the system and a semi-permeable membrane type separator is used to purify the gas for use as a carrier fluid and to simultaneously provide a source of concentrated ambient impurities, a sample quantity of which is later interjected into the carrier flow stream at the input to the column.

3,772,910

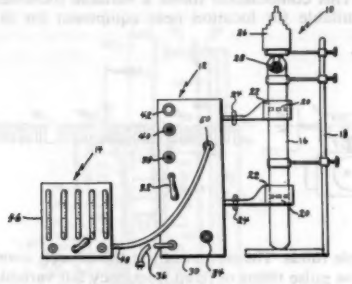
PRECISION VISCOMETER TIMER CONTROL SYSTEM

James N. McGinn, and Thomas L. Dellecave, both of Rome, N.Y., assignors to the United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 22, 1971, Ser. No. 210,981
Int. Cl. G01n *11/12*
U.S. Cl. 73—57 3 Claims

A precision viscometer timer control system where a pair of spaced coils surround a precision tube, so that as a metal ball

passes through the coil the inductance is changed causing an oscillator circuit to react, influencing a switching circuit



thereby automatically starting and stopping a connected timer.

3,772,911

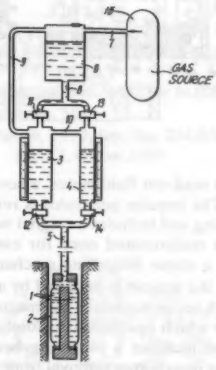
GROUND STRAIN GAUGE

Konstantin Vladimirovich Ruppeneit, Verkhnyaya 3, kv. 65; Evgeny Semenovich Prigozhin, Glagoleva 24, korpus 2, kv. 14, both of Moscow; Vsevolod Nikolaevich Denisov, Parkovaya 7, kv. 15, Ljubertsy Moskovskaya oblasti, and Alexandr Vasilievich Golubev, Dokukina 9, kv. 14, Moscow, all of U.S.S.R.

Filed May 20, 1971, Ser. No. 145,304

Int. Cl. G01n *3/10*

U.S. Cl. 73—88 E **4 Claims**



A ground strain gauge is provided in which there is a working liquid storage tank which, in conjunction with shutoff valves at the inlet and outlet sides of two measuring cylinders, makes it possible to increase the working liquid volume in a flexible chamber inserted in a hole in the ground to be tested.

3,772,912

LOAD CELL COMPRISING TWO MUTUALLY MOVABLE MEMBERS IN A MEASURING DIRECTION

John-Erik Andersson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

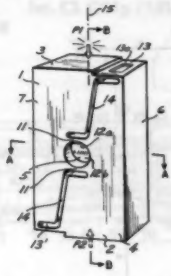
Filed May 19, 1971, Ser. No. 144,831

Claims priority, application Sweden, June 1, 1970, 7551/70

Int. Cl. G01l *1/22*

U.S. Cl. 73—141 A **11 Claims**

A load cell comprises two identical members, mutually movable along a central axis, connected by at least one membrane formed by cavities wherein the membrance includes a plane defined by the central and mutual axes of the load cell



with strain gauges on the membrane which acts as the web portion of an I-beam.

3,772,913

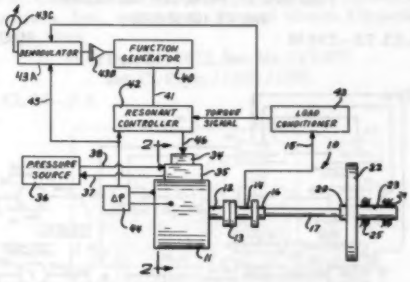
TORSIONAL RESONANT SYSTEM

Keith D. Zell, Shakopee, and August T. Kaufman, Minneapolis, both of Minn., assignors to MTS Systems Corporation, Minneapolis, Minn.

Filed Dec. 16, 1971, Ser. No. 208,628

Int. Cl. G01h *13/00*

U.S. Cl. 73—67.2 **9 Claims**



A resonant fatigue testing machine for testing specimens in torsion utilizing servovalve controlled rotary hydraulic actuator means. The specimen is connected to a mass which produces a spring-mass system that resonates at a selected natural frequency. The servovalve is operated in response to automatic controls to supply the necessary power to maintain resonance through the hydraulic actuator.

3,772,914

APPARATUS FOR MEASURING TIME LAPSE BETWEEN BRAKE DEMAND AND APPLICATION

Wolfgang Pohl, Berenbostel, and Dieter Luhdorff, Hannover, both of Germany, assignors to Westinghouse Bramsen- und Apparatebau GmbH, Hannover, Germany

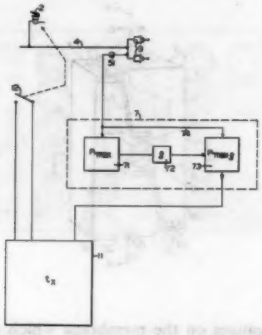
Filed Oct. 30, 1972, Ser. No. 302,353

Int. Cl. G04f *9/06*

U.S. Cl. 73—121 **7 Claims**

An automatically calibrated test apparatus for determining the time required to attain a certain critical brake pressure following initiation of a brake application where the critical pressure is a predetermined percentage of the maximum brake pressure attainable. The critical brake pressure is calibrated and registered at a comparator device in response to an initial brake application following the release of which a subsequent

application is made to start a timer and concurrently connect the effective brake application signal to the comparator for terminating the timer when the effective brake application signal matches the critical brake pressure signal registered



during the initial brake application. A capacitor stores the maximum brake pressure signal generated by the initial brake application while a potentiometer calibrates the signal in accordance with a correction factor determined by said predetermined percentage.

3,772,915

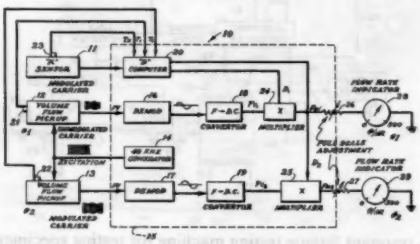
DENSITY CORRECTED FLOWMETER

Leo Stamler, Plainview, N.Y., assignor to Consolidated Airborne Systems, Inc., Carle Place, N.Y.

Filed Oct. 27, 1970, Ser. No. 84,286

Int. Cl. G01f *1/00*

U.S. Cl. 73—194 M **10 Claims**



A fuel management system capable of indicating the mass fuel flow rate, the total mass of fuel consumed and the hours of flight remaining. The mass fuel flow values are determined by multiplying the volumetric flow rates by the density of the fuel. Temperature correction is provided for determining accurate density values at the location of the volumetric measurement positions. Integration of the mass fuel flow rate provides the total mass fuel consumed.

3,772,916

VARIABLE INCREMENT TRANSDUCER FOR FLUID FLOW METERING SYSTEMS

William M. Booth, Grand Haven, and Robert C. Thompson, Muskegon, both of Mich., assignors to Bennett Pump Incorporated, Muskegon, Mich.

Filed Dec. 8, 1971, Ser. No. 205,800

Int. Cl. G01f *15/06*; B67d *5/22*

U.S. Cl. 73—194 E **11 Claims**

A solid state device for generating signals in response to a flow metering device is composed of a fixed frequency signal generator periodically blocked for more then one of its oscillation periods by the output of a second signal generator composed of a light emitting diode, a phototransistor, an interposed perforated shutter disc driven by the flow metering device and suitable amplifier, in particular a Schmitt trigger circuit. This combination forms a variable increment transducer suitable for location near equipment for dispensing

flammable fuilds. The output of the transducer, consisting of successive pulse trains of fixed frequency but variable length, is supplied to equipment which (*a*) counts the number of pulse trains to register total volume (*b*) limits the number of pulses in each train to a price related number and (*c*) counts the pulses so limited to register total price.

3,772,917

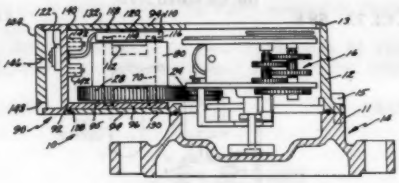
FLUID FLOW METER

Paul D. Lutz, and William M. Booth, both of Grand Haven, Mich., assignors to Carlon Meter Company, Inc., Grand Haven, Mich.

Filed June 21, 1971, Ser. No. 154,947

Int. Cl. G01f *3/12*

U.S. Cl. 73—231 R **19 Claims**



In a remote read-out fluid meter, a novel impulse generator is provided. The impulse generator is removably mounted to the meter casing and includes a magnet mounted on a rotating gear which is reciprocated once for each revolution of the drive gear of a meter measuring mechanism. The reciprocal movement of the magnet is detected by a stationary armature which for each reciprocation of the magnet generates an electrical impulse which operates a remotely positioned counter. The generator includes a mounting bracket which permits quick and easy insertion or removal from the meter casing.

3,772,918

WATER-COOLED REACTOR CORE TEST APPARATUS

Arnold Gordon Bowles, Warren, Pa., assignor to National Forge Company, Irvine, Pa.

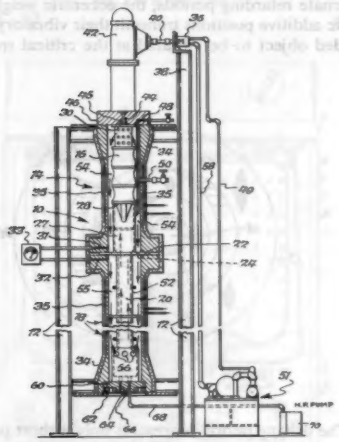
Filed Apr. 20, 1972, Ser. No. 245,954

Int. Cl. G01m *19/00*

U.S. Cl. 73—432 SD **3 Claims**

An apparatus for testing a water-cooled reactor core in which the reactor core to be tested is placed in a casing within a pressure chamber which has an internal diameter slightly larger than the external diameter of the reactor core casing such that an annular flow passage is created between them. An impeller type pump mounted on top of the pressure chamber has its inlet port connected to one end of the reactor core casing. The pump circulates demineralized water up through the reactor core and the casing and discharges fluid into the annular flow passage to reenter the opposite end of the reactor core

casing. Heaters mounted on the outside of the pressure chamber control the temperature of the fluid within the pressure chamber. An external pump initially fills the chamber and thereafter maintains the fluid within the pressure chamber at predetermined pressure.

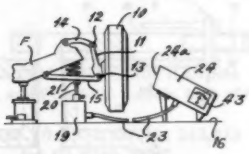


3,772,919

BALANCING APPARATUS FOR ROTATING BODIES AND METHOD OF PRODUCING FREQUENCY STABLE PHASE DELAY

David A. Senften, Florissant, Mo., assignor to Hunter Engineering Company, Bridgeton, Mo.

Filed Feb. 9, 1972, Ser. No. 224,833
Int. Cl. G01m *1/00*
U.S. Cl. 73—457 **11 Claims**



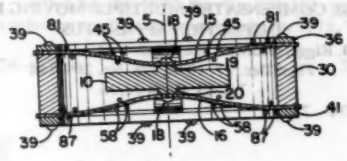
Apparatus through which the orientation of an unbalancing mass of a supported rotating body may be determined electronically. In arriving at the orientation determination a signal is generated corresponding to the resulting vibratory motion of the unbalanced rotating body, a frequency stable phase delay is produced by the electronic system and is applied to the generated signal, and a stroboscopic light is triggered by the delayed signal so as to illuminate the rotating body periodically and is coordinated with the known fact that in a rotating unbalanced body there is a 90° lead between the forcing function produced by the rotational velocity and position of the unbalancing mass and the resulting vibratory acceleration of the body when the rotational speed coincides with the natural resonant frequency of the supported rotating body.

3,772,920

ACCELEROMETERS

Stephen Lovell Burgwin, Circle Pines, Minn., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Aug. 24, 1970, Ser. No. 66,169
Int. Cl. G01p *15/08*
U.S. Cl. 73—517 B **4 Claims**



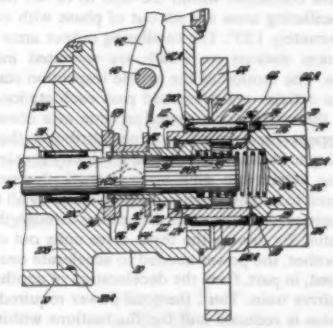
An accelerometer wherein a seismic mass is supported by magnetostrictive supports having preferred initial magnetic domain orientation. Displacement of the seismic mass due to acceleration rotates magnetic domains to change magnetic permeability in the supports; these changes in permeability are measured as an indication of acceleration. A closed loop embodiment feeds back a sensing output to induce a magnetic field opposing domain rotation, achieving domain rebalance. The change in the magnetizing feedback current between the unaccelerated and accelerated states is a measure of acceleration.

3,772,921

ENGINE STARTER

John W. Carlson; Morris Esche, and Steven E. Ferguson, all of Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1972, Ser. No. 317,277
Int. Cl. F02n *11/00, 11/08*
U.S. Cl. 74—7 A **4 Claims**



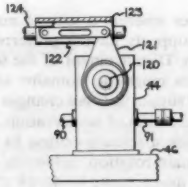
An engine starter for an internal combustion engine where a pinion can be moved into mesh with the ring gear of the engine and is driven by an armature of an electric motor. The starter includes a starter drive which does not have an overrunning clutch. The pinion is meshed with the ring gear of an engine by a solenoid and is automatically disengaged from the ring gear by a spring when a system that responds to cranking motor speed deenergizes the solenoid. The starter includes a nose housing having a tubular bore which receives a pinion that closes the open end of the tubular bore except for some clearance between the outside of the pinion and the bore. A seal encircles the solid pinion and the pinion and seal serve to prevent foreign material from entering the interior of the starter. The seal also serves to wipe the tubular bore of the nose housing during movement of the pinion. The pinion is

supported at its exterior by a bearing interposed between the exterior of the pinion and the wall defining the tubular bore in the nose casting. The pinion assembly therefore receives its primary support at its exterior and the pinion assembly has an internal helical spline connected with a sleeve member which can be axially reciprocated and rotatably driven by an armature shaft.

3,772,922
PHASE COMPENSATED MULTIPLE MOVING HEAD INSPECTION APPARATUS

Darius O. Riggs, Ottawa Lake, Mich.

Filed Dec. 17, 1971, Ser. No. 209,144
Int. Cl. F16h *21/16*
U.S. Cl. 74—25 **4 Claims**



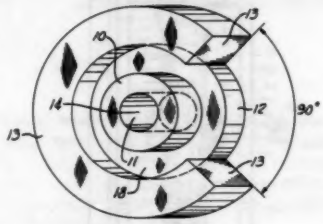
Apparatus and method for driving three article inspection stations out of phase with one another for inspecting moving articles with a minimum expenditure of drive power. In this invention, three inspection station drive mechanisms are utilized. Each of the three drive mechanisms is an identical unit utilizing a cam to produce an oscillating output from an arm, the cam being driven by a continuously rotating input shaft. Each of the three units are coupled in series in a linear array and driven by a common drive motor. A split coupling is used to connect the three drive units together, allowing the phase of the cams contained within the unit to be set independently. The oscillating arms are set out of phase with each other by approximately 120°. The oscillating output arms drive article inspection stations on which are mounted inspection apparatus. The motion of the article inspection stations is such that, as articles are precessed past each station, the station tracks the article for a period of time at a constant velocity and inspects the article for various attributes, the station then returning to its starting point at a velocity greater than its inspecting velocity to pick up and track the next container presented to it. This function is performed by all three inspection stations on each article that passes through the inspection apparatus. By driving the three drive units out of phase with one another, the power needed to accelerate one unit may be furnished, in part, from the deceleration of another unit in the series drive train. Thus, the total power required to drive the apparatus is reduced and the fluctuations within the system caused by relatively high transfers of power from acceleration to deceleration is reduced, thereby allowing the operation of the system without the use of an energy storage element, such as a flywheel, to help absorb these large fluctuations in power requirements.

3,772,923
ECCENTRIC WEIGHT ROTARY VIBRATOR

Ralph D. Burt, 117 Beeney Rd., Port Charlotte, Fla.

Filed Mar. 1, 1972, Ser. No. 230,806
Int. Cl. F16h *33/00*
U.S. Cl. 74—61 **9 Claims**

An intermittently driven eccentric weight rotary vibrator with matched dual or coaxially concentric weights rotatable relative to each other about a common axis, which eccentric weights normally are urged to assume an additive eccentric position except when rotarily driven at which time the driving forces place the eccentric weights in balance during these alternate driving periods. The attained speeds of the balanced weights are above the critical speed required for vibrating the loaded object to which the rotary vibrator is attached. During the alternate retarding periods, the eccentric weights in their eccentric additive positions transmit their vibratory motion to the loaded object to be vibrated at the critical speed of the

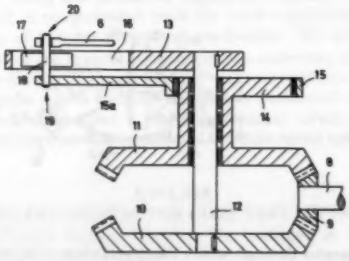


same. The driving period represents only a short part of each operating cycle and the retarding periods provide a declining series of spaced critical nodes effective in producing vibrations over a period of approximately one minute. The energy driving or storage period may be one-tenth of the vibratory period with the total cycle being approximately one minute. This improved result is due to the constuction of the vibrator and its parts with very little drain on the energizer, which is usually a motor driven by a battery.

3,772,924
DRIVE MECHANISM FOR THE YARN GUIDE MEANS OF A LOOM

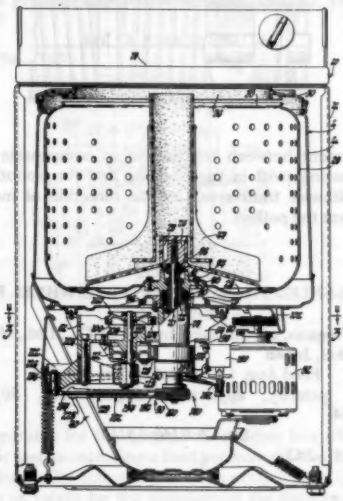
Willi Suffner, Breslauerstrasse 23, Dornigheim, 6451 Germany

Filed Sept. 16, 1971, Ser. No. 180,988
Claims priority, application Germany, Sept. 18, 1970, P 20 46 149.8
Int. Cl. F16h *21/40*
U.S. Cl. 74—81 **3 Claims**



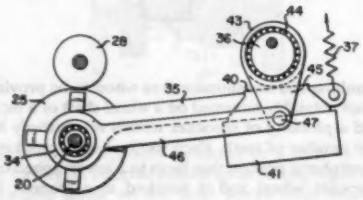
A crank drive for a reciprocating yarn guide carrier band of a warp knitting machine is driven by the main drive shaft of the machine. It comprises a crank shaft, a first operating crank rotating with the crank shaft in one direction, an intermediate crank disc mounted on the crank shaft and driven in an opposite direction, a coupling rotatably mounted on the intermediate crank disc, and a driving rod for the yarn guide means. The pivot which links one driving rod end to the coupling is longitudinally slidable in the first operating crank.

3,772,925
CABLE ARRANGEMENT FOR CLOTHES WASHER ROLLER DRIVE MECHANISM
Kenneth O. Sisson, Dayton, Ohio
Filed Nov. 13, 1972, Ser. No. 305,948
Int. Cl. F16c 1/02
U.S. Cl. 74—82 4 Claims



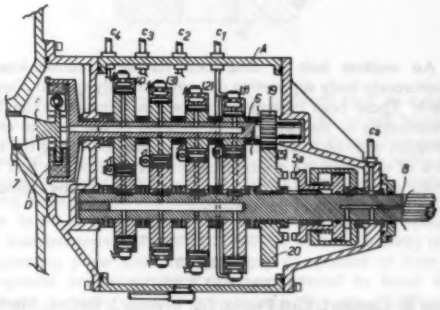
A dry-type roller drive mechanism for the agitator and spin tub of a clothes washing machine has a reversible motor utilized to rotate a driven spin roller through a friction drive including a self-energizing roller and to oscillate a slider crank drum through a slider crank drive including an improved cable assembly on the slider crank arm. The cable assembly is balanced by the use of a large diameter cable wrapped in one direction about the slider crank drum and a small diameter cable wrapped in the other direction about the slider crank drum and doubled on itself to straddle the large diameter cable. An improved cable tensioner in the cable assembly includes a rotatable cam connected at the bight of the small diameter cable and spring biased in a direction to take up cable stretch at one end of the slider crank arm. The large diameter cable has a threaded portion at the other end of the slider crank arm and a nut for initial adjustment of cable tension.

3,772,926
ECCENTRIC DRIVE MECHANISM
Mohanjit S. Sidhu, and Donald E. Landis, both of Cambridge, Ohio
Filed Apr. 10, 1972, Ser. No. 242,413
Int. Cl. F16h 29/00
U.S. Cl. 74—116 4 Claims



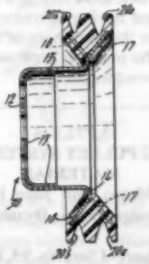
A mechanism for minimizing rotational movement of an cyclically-operated actuating member in which an eccentrically mounted cam member is rotatably mounted within a sleeve member. A link secured to an end of the sleeve member restricts the lateral movement of the sleeve member thereby allowing the rotation of the cam member to move the sleeve in a vertical direction which actuates a drive member.

3,772,927
BELT TRANSMISSION DEVICE
Jean Henri Bertin, 1, rue Deleau, 92 Neuilly-sur-Seine, France
Filed July 26, 1972, Ser. No. 275,151
Claims priority, application France, July 30, 1971, 7128056
Int. Cl. F16h 9/04, 7/12
U.S. Cl. 74—217 R 25 Claims



Speed change box comprising several transmission assemblies of which each, corresponding to a unique and different transmission ratio, comprises a respective transmission belt which can be applied, to permit the transmission of force, by pressure of a fluid, to a drive pulley and a driven pulley, and means for selectively applying the pressure of the fluid to a transmission assembly corresponding to the chosen ratio.

3,772,928
COMPOSITE V-BELT PULLEY AND METHOD
William P. Gobeille, Farmington, Mich.
Filed June 7, 1972, Ser. No. 260,378
Int. Cl. F16h 55/48; B21d 53/26
U.S. Cl. 74—230.7 5 Claims

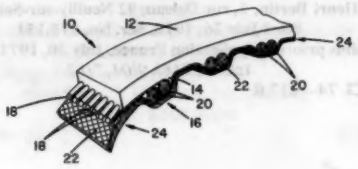


A novel composite V-belt pulley construction for use with automotive V-belts and the like; and, a novel method of manufacturing the composite V-belt pulley.

3,772,929
COG-BELT & METHOD FOR ITS PRODUCTION

John D. Redmond, Jr., Littleton, Colo.

Filed Oct. 14, 1971, Ser. No. 189,440
Int. Cl. F16g 5/00, 5/20
U.S. Cl. 74—231 C 25 Claims

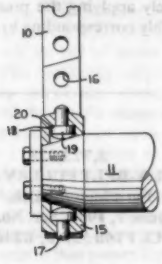


An endless belt is described having a tensile-loaded elastomeric body supporting circumferentially spaced cogs or teeth. These cogs contain an embedded member extending transversely to the direction of rotation of the belt, in combination with an outer fabric layer positioned along the surface of the cogs. As a modification, the side of the belt opposite the toothed side may carry load transmitting elements for dual utilization of the same belt.

3,772,930
METAL BELT DRIVE

Ivan R. Lamport, East Peoria, Ill.; Francis J. Rother, Morton, Ill., and Calvin D. Loyd, Peoria, Ill., assignor to Caterpillar Tractor Co., Peroria, Ill.

Filed Dec. 22, 1971, Ser. No. 210,678
Int. Cl. F16g 1/00
U.S. Cl. 74—231 M 6 Claims



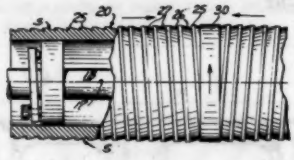
A positive traction belt drive having a belt made from beryllium-copper metal and having apertures which are drivingly engaged by dowels on the periphery of a pulley. The belt engaging periphery of the pulley is crowned to reduce belt wear and provide for improved tracking.

3,772,931
SELF CENTERING PULLEY SYSTEM FOR THIN FILM MATERIAL

Rene Conrad, San Mateo, and John Hohmann, Sunnyvale, both of Calif., assignors to Dynaloc Corporation, San Mateo, Calif.

Continuation-in-part of Ser. No. 95,105, Dec. 4, 1970, abandoned. This application Apr. 5, 1972, Ser. No. 241,153
Int. Cl. F16h 7/18
U.S. Cl. 74—240 2 Claims

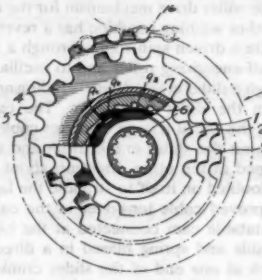
For endless belting of thin film material having characteristic fabricational twists causing sidewise creeping and wrinkling of such material relative to a pair of pulleys crowned toward center and each having a surface configuration for 180° wrap around engagement to afford alternately opposite inwardly and outwardly tending crosswise forces to such belting and the tensioning of the latter at one edge by an unparallel adjustment between the pulleys to compensate for the creep creating twist in such belting and for smoothing the latter widthwise transversely of the direction of movement thereof over the pulleys.

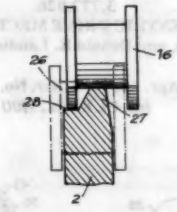


3,772,932
MULTI-SPEED TRANSMISSION FREE WHEEL FOR A BICYCLE

Masashi Nagano, c/o Shimano Industrial Co., Ltd., No. 77, 3-cho, Sakai, Japan

Filed Aug. 13, 1971, Ser. No. 171,526
Claims priority, application Japan, Dec. 30, 1970, 45/141124
Int. Cl. F16h 55/30
U.S. Cl. 74—243 3 Claims





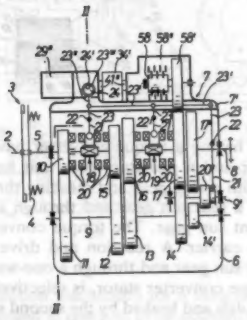
In a multi-speed transmission free wheel to be provided on a wheel hub rotatably mounted on a wheel shaft of a bicycle are included a plurality of sprocket wheels respectively having a different number of teeth. Each tooth of said sprocket wheels has its peripheral portion that faces to a lowest speed transmission sprocket wheel and is notched in a manner that the foremost end thereof is deviated toward a highest speed transmitting sprocket wheel so that when the driving chain to be driven by treading the pedals, the shifting operation can be effected smoothly and exactly despite of a big difference in tooth number between said two sprocket wheels.

3,772,933

MEANS FOR PERFORMING GEAR CHANGES IN MULTI-RATIO GEAR-BOXES

Karl Prenzel, Neu-Katzwang, and Hans Barthel, Nurnberg, both of Germany, assignors to Ardie-Werk GmbH, Nurnberg, Germany

Filed Oct. 8, 1971, Ser. No. 187,920
Claims priority, application Germany, Oct. 12, 1970, P 20 50 038.3
Int. Cl. F16h 5/06, 3/74
U.S. Cl. 74—335 4 Claims



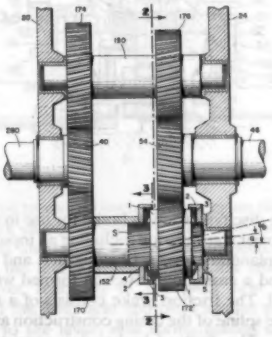
An apparatus for changing gears in a gear box which has a hydraulic system including a fluid pressure reservoir, cylinders and hydraulically actuated pistons, a sump for the fluid and a plurality of valves for the direction of the fluid between the reservoir, cylinders and sump is provided with a cover for the gear box which has the various components of the hydraulic system mounted thereon. In a preferrred embodiment, the reservoir, cylinders, valves and sump are directly connected together without conduits therebetween.

3,772,934

FLOATING HELICAL GEAR

Robert C. Warren, Carbondale, Pa., assignor to Robert C. Warren, Carbondale, Pa., John C. Baumann, Childs, Pa.

Filed Nov. 15, 1971, Ser. No. 198,746
Int. Cl. F16h 57/00
U.S. Cl. 74—410 10 Claims



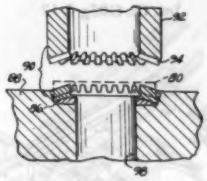
A helical gear is floatably mounted on a shaft by virtue of the gear having an internal helical spline engaging an external corresponding spline on the shaft whose helix angle differs from that of the gear teeth so that axial displacement of the gear along the spline will cause the gear to rotate to an extent that the gear teeth alignment relative to a matching gear changes. The invention is applicable to any gear type arrangement involving multiple countershafts.

3,772,935

COMPOSITE HEAVY-DUTY SINTERED POWDERED MACHINE ELEMENT

William M. Dunn, 28639 Oak Point Dr., Farmington, Mich., and Myron C. Sarnes, 20248 Woodhill, Northville, Mich.

Filed Mar. 20, 1972, Ser. No. 235,940
Int. Cl. F16h 55/00
U.S. Cl. 74—434 6 Claims



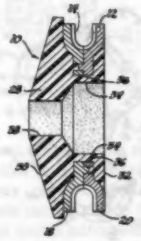
A composite heavy-duty machine element such as a face gear (FIG. 7), a spur or helical gear (FIG. 14), or ball bearing races (FIG. 18), has its working or load bearing portion composed of sintered powdered high-performance alloy while its supporting portion not subjected to concentrated or intense heavy loads is made of a base metal such as sintered powdered iron. In FIGS. 1 through 18 the powders of the two portions are inserted separately and successively in the die cavity of a briquetting press and simultaneously compacted to form a composite briquette which is then sintered to bond the separate portions together even though they are of different materials with different physical characteristics. The resulting composite sintered powdered metal machine elements is of lower material cost than such an element formed of high-performance alloy in its entirety, and may then be used as it is if of satisfactory density for its intended use, or it may be further densified by means of an additional compressing operation with the article cold, warm or by a hot forging operation, or with subsequent sintering if deemed necessary depending upon its intended use. If the machine element is to be a face gear, the face gear as briquetted and sintered is subjected to a further deforming operation to so incline its teeth.

3,772,936

METHOD FOR MANUFACTURING A GEAR WHEEL

Winthrop B. Conrad, Franklin, Mich., assignor to Telefax Incorporated, Troy, Mich.

Filed Feb. 22, 1972, Ser. No. 228,028
Int. Cl. F16h 55/04
U.S. Cl. 74—434 11 Claims

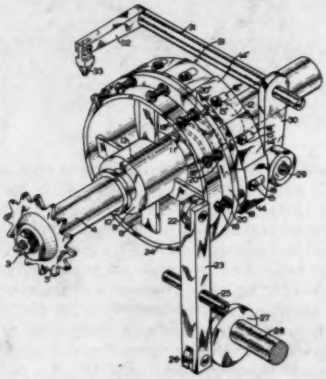


This invention relates to a gear wheel and method for making the same which is used in an assembly including a flexible motion transmitting core element utilized to transmit motion in a curved path. The gear wheel includes a circular metal wheel comprised of two substantially identical metal halves mated together to define a peripheral groove with helical teeth disposed therein for engaging helical windings on the core element and a plastic hub portion molded partially about the circular metal wheel including an axial bore therethrough for receiving a support member or drive shaft.

3,772,937
PNEUMATIC REMOTE SPEED CONTROL DEVICE FOR MARINE ENGINE

Makoto Takagi, and Akifumi Nitta, both of Tarumi-ku, Kobe, Japan, assignors to The Nippon Air Brake Co., Ltd. Kohe, Japan.

Filed Aug. 10, 1971, Ser. No. 170,452
Claims priority, application Japan, Aug. 19, 1970, 45/072489
Int. Cl. G05g 7/12
U.S. Cl. 74—491 7 Claims

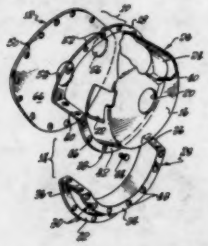


A cam mechanism geared to the operating handle of a remotely located operator's speed controller for a marine engine, said cam mechanism including cam means operable by movement of the operator's handle to various positions for transmitting a corresponding degree of movement through a lever arrangement to the operating stem of a fluid pressure operable control valve device which remotely controls the speed of the engine.

3,772,938
UNIVERSAL BELL HOUSING AND DEFLECTOR PLATE

Robert E. Johnson, Los Angeles, Calif., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Nov. 6, 1972, Ser. No. 303,802
Int. Cl. F16h 57/02
U.S. Cl. 74—606 R 5 Claims

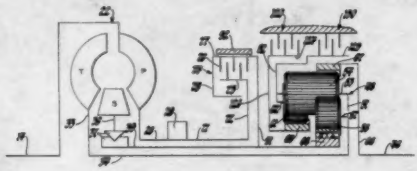


A deflector plate and bell housing are disclosed which permit the use of this assembly on vehicles with many different starter motor positions and sizes and which provide access to the enclosed clutch and flywheel without removal of the entire bell housing. The latter is formed by bolting together two segments with the lower segment (when in position on a vehicle) being removeable. The deflector plate is provided with an enlarged aperture to accommodate variously positioned starter motor housings. An adapter is attachable to the deflector plate to reduce and vary the shape of this aperture so that each starter motor gear meshes positively with the flywheel.

3,772,939
THREE-SPEED SPLIT TORQUE TRANSMISSION

Gilbert K. Hause, Bloomfield Hills, Mich., assignor to General Motors Corp., Detroit, Mich.

Filed Dec. 15, 1971, Ser. No. 208,078
Int. Cl. F16h 47/08
U.S. Cl. 74—677 4 Claims

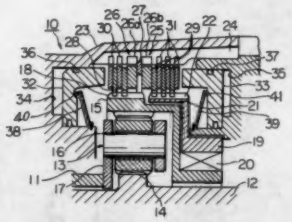


A transmission having a torque converter having a pump turbine and stator and a planetary gear unit having a long pinion meshing with a ring gear and meshing through a rear short pinion with a rear sun gear and through a front short pinion with a front sun gear. The torque converter turbine drives the pinion carrier. A reaction and drive shaft, connected to the rear sun gear and through a one-way freewheel device to the torque converter stator, is selectively driven by an input driven clutch and braked by the second speed brake. The front sun gear is connected to the first speed brake. The reverse brake holds the carrier. The ring gear drives the output shaft. The carrier has a central member and end plates with three sets of through pinion shafts for mounting the long pinions centrally between the two short pinions and connecting the carrier members together.

3,772,940
MULTIPLE DISC TYPE FRICTION BRAKE FOR AN AUTOMOTIVE AUTOMATIC POWER TRANSMISSION

Kunio Ohtsuka, No. 35 Yamate-cho, Naka-ku, Yokohama, and Toshiyuki Miyauchi, No. 714, Nishiterao, Kanagawa-ku, Yokohama, both of Japan

Filed Jan. 18, 1972, Ser. No. 218,781
Int. Cl. F16h 57/10; F16d 55/10
U.S. Cl. 74—785 11 Claims



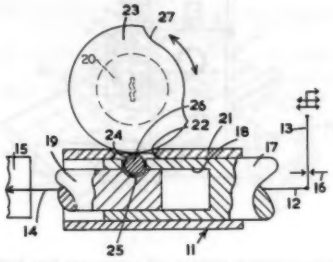
A multiple disc type friction brake for use in an automotive automatic power transmission including an input shaft, an output shaft, a planetary gear set having first and second rotary members, and a casing construction formed with a spline on its inner wall. The friction brake consists of a retaining plate splined to the spline of the casing construction and held axially fast thereon. The friction brake also consists of first and second sets of rotatable plates located on both sides of the retaining plate, and first and second rotatably plates which cooperate with the first and second sets of rotatable plates, respectively. The rotatable plates are splined on splines formed on the first and second rotary members respectively and axially movable toward and away from the retaining plate. The rotatably plates are splined to the spline of the casing construction for axial movement. First and second fluid pressure operated servo pistons are provided for actuating first and second sets of brake disc assemblies.

3,772,941

GEAR SELECTION MECHANISMS FOR VEHICLES

Leslie James Nevett, Clitheroe, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 10, 1972, Ser. No. 225,136
Claims priority, application Great Britain, Feb. 15, 1971, 4,622/71
Int. Cl. B60k *21/00*; G05g *5/10*
U.S. Cl. 74—850 5 Claims



A gear selection mechanism for a vehicle, including a link member arranged at one end to be coupled to the gear selection lever and arranged at its other end to be coupled to the gear box. The link member normally transmits the movement of the lever to the gear box to operate the gear box, and the link member is provided with first and second parts which are capable of movement relative to one another. The mechanism further includes a locking member selectively operable by the driver of the vehicle to either lock the two parts of the link member relative to one another so that the link member acts as a solid component, and transmits the movement of the operating lever to the gear box, or alternatively releases the two parts of the link member so that they can move relative to one another in which situation the link member does not transmit the movement of the lever to the gear box.

3,772,942

ADJUSTABLE TORQUE WRENCH

Bosko Grabovac, c/o Consolidated Devices, Inc., 2120 Edwards Ave., Newport Beach, Calif.

Filed July 27, 1972, Ser. No. 275,628
Int. Cl. B25b
U.S. Cl. 81—52.5 10 Claims

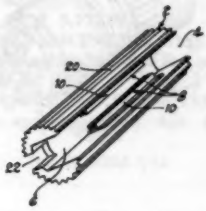
In a click-type torque wrench comprising an elongate tubular lever, a work engaging head pivotally mounted at the front end of the lever and having a lever arm projecting freely and rearwardly in the lever, spring loaded cam and link means within the lever rearward of the lever arm to normally yieldingly hold the lever arm and head against pivotal movement relative to the lever, said spring loaded cam and link means comprising a link with a flat rearward disposed cam seat pivotally connected with and projecting rearwardly from the lever arm, axially adjustable pivotal bearing means between the ends of the lever, a slide block with a flat, forwardly disposed cam seat in the lever, a cam block with flat faces between and normally engaging the cam seats, spring means rearward of the slide block and normally yieldingly urging the slide block forwardly and novel, manually operable means rearward of the spring means to vary the force exerted by the spring means through the cam and link means.

3,772,943

TURNBUCKLE WRENCH

Takeo Itano, Chicago, Ill., assignor to Waldon Devices Inc., Wilmette, Ill.

Filed Jan. 26, 1972, Ser. No. 220,856
Int. Cl. B25b *13/02*
U.S. Cl. 81—119 6 Claims



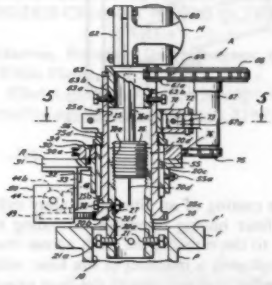
A turnbuckle wrench is disclosed which is constituted by an elongated slotted body. Formed on each side wall of the slot below the outer edges thereof and extending longitudinally in the slot space are resilient retaining means, the free surfaces of which are spaced apart to engage and hold a turnbuckle link.

3,772,944

FLANGE FACING MACHINE

Anthony F. Becker; W. Mack Crook; Charles R. Sherer; Mason M. Lilly, and Robert B. Kinzbach, all of Houston, Tex., assignors to DND Corporation, Houston, Tex.

Filed Jan. 3, 1972, Ser. No. 215,007
Int. Cl. B23b *3/26*
U.S. Cl. 82—4 C 1 Claim



A portable compact machine for resurfacing the faces of flanges on pipes and/or valves, wherein a base is releasably mounted in the bore of the pipe or valve in alignment therewith for accurate cutting of the flange face with a lathe tool, and wherein the tool is automatically fed radially as it is rotated by a power means mounted on a support column removably positioned on the base.

3,772,945

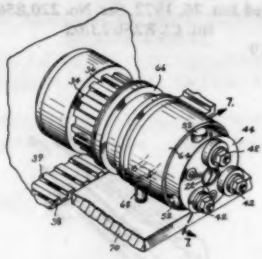
TUBE CUTOFF DEVICE

John F. Varga, Harbert, Mich., assignor to Weldun Tool and Engineering Co., Bridgman, Mich.

Filed May 18, 1972, Ser. No. 254,763
Int. Cl. B23b
U.S. Cl. 82—70.2 1 Claim

A cutoff device for tubing which includes a guide member

serving to direct a tube along a selected axis. A cutoff member is carried by the guide member and is rotatable about the tube



guide axis. The rotatable cutoff member which carries a shiftable cutter part serves to cut the tube into selected lengths.

3,772,946

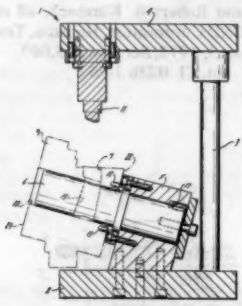
FLASH REMOVAL

Salvatore S. Sarra, Fond Du Lac, Wis., assignor to Kiekhaefer Aeromarine Motors, Inc., Fond du Lac, Wis.

Filed May 4, 1972, Ser. No. 250,284

Int. Cl. B22d *31/00*

U.S. Cl. 83—13 **2 Claims**



Following die casting of an aluminum alloy cylinder block with an insert liner having openings extending through the liner and block to the outside, the flash across the opening is removed by employing a mandrel in the liner with a passage through the mandrel registering with the liner opening, and inserting a male punch through the opening from the outside to shear the flash around the edge of the opening and break it loose after which it falls out through the passage in the mandrel upon removal of the punch and mandrel.

3,772,947

HEAT APPLICATOR APPARATUS AND METHOD FOR FASTENER TAPES

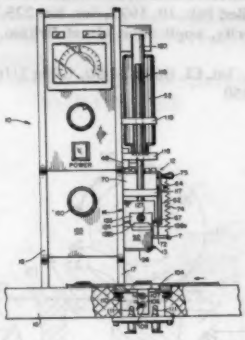
Roger D. Foskett, Winchester, and David B. Russell, Ashland, both of Mass., assignors to American Velcro, Inc., New York, N.Y.

Filed Apr. 16, 1971, Ser. No. 134,816

Int. Cl. B26d *5/42*

U.S. Cl. 83—18 **5 Claims**

A method and apparatus for applying relatively small increments of hook and loop fastener tape to various web materials including means for feeding and cutting said increments from a tape source and vacuum means for transferring and holding



said increments prior to heat bonding of said increments to said web material.

3,772,948

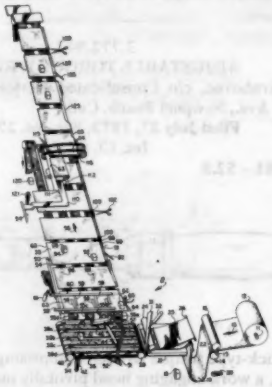
METHOD AND APPARATUS FOR FORMING CLOTH LENGTHS WITH FOLDED HEMS

Perry E. Burton, Duluth, Ga., assignor to Burton & Noonan, Duluth, Ga.

Continuation-in-part of Ser. No. 43,756, June 5, 1970, Pat. No. 3,640,235. This application Dec. 29, 1971, Ser. No. 213,510

Int. Cl. B26d *5/38*; B65h *35/06*

U.S. Cl. 83—23 **6 Claims**

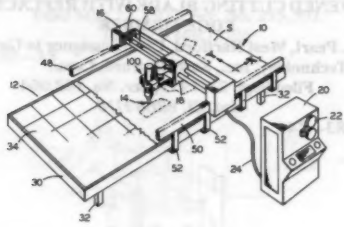


A method and apparatus for forming cloth lengths with folded hems from a continuous supply of cloth wherein the supply of cloth is intermittently fed along a first path to a cutting and transfer station, a predetermined length of cloth is cut from the supply and transferred to a second path extending approximately normal to the first path, a cut end of the cloth length is double folded and sewn, the cloth length is folded across its length so that its other cut end is positioned on the same side as the hemmed end, and the other cut end is double folded and sewn. The folded and hemmed cloth lengths are folded again and stacked at the end of their second path.

3,772,949
METHOD AND APPARATUS FOR CUTTING SHEET MATERIAL

Robert J. Pavone, Wapping, and Leonard R. Landers, South Windsor, both of Conn., assignors to The Gerber Scientific Instrument Company, South Windsor, Conn.

Filed Jan. 17, 1972, Ser. No. 218,133
Int. Cl. B26f 1/38
U.S. Cl. 83—56 25 Claims

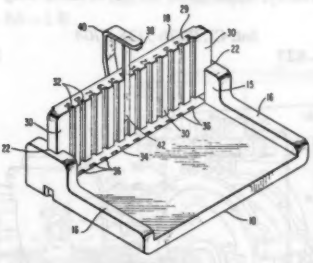


A method and apparatus for cutting pattern pieces from an anisotropic sheet material having different cutting characteristics along different principal directions utilize a small cutting wheel that is guided along the periphery of a pattern piece to be cut by means of a digital control computer. The computer derives command signals from a stored cutting program and applies the signals to drive motors within a tool carriage to cause the cutting wheel to move along the periphery of the pattern piece. A load control mechanism is utilized to support the cutting wheel from the tool carriage and to vary the force with which the wheel is urged or pressed into cutting contact with the sheet material. When the wheel moves in cutting engagement with the material in a direction that offers increased resistance to cutting, the load control mechanism presses the cutting wheel more firmly against the material and when the wheel moves in a direction of reduced cutting resistance, the load control mechanism partially unloads the wheel to prevent cutting or increased wear of the work surface on which the sheet material is supported.

3,772,950
PORTABLE CARD PUNCH

Irvin Sorensen, Arlington, and William D. Rowe, Falls Church, both of Va., assignors to Quintex Corporation, Falls Church, Va.

Filed Aug. 23, 1971, Ser. No. 173,924
Int. Cl. B26f 1/16
U.S. Cl. 83—143 8 Claims

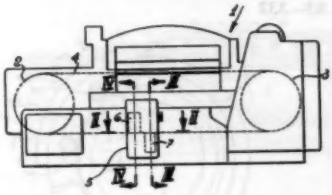


A portable card punch having a horizontal member which carries a vertical member. The horizontal member has a transverse slot in which the vertical member is seated and has a substantially planar surface for carrying a card. The vertical member has a transverse slot adjacent the planar surface of the horizontal member so that the card may pass therethrough. A plurality of vertical grooves extend the full vertical dimension of the vertical member and a manually actuatable perforator rides in a selected one of the grooves. The perforator may be biased away from the horizontal member to disengage the card after the perforation thereof and to prevent movement of the card relative to the horizontal member during the perforation operation. The vertical member may be hinged to pivot to a position adjacent the horizontal member for increased compactness and portability.

3,772,951
SKIN SLICING MACHINE

Silvio Repetto, Modena, Italy, assignor to S.p.A. Luigi Rizzi & C., Modena, Italy

Filed Apr. 12, 1971, Ser. No. 133,032
Claims priority, application Italy, Apr. 14, 1970, 23283 A/70
Int. Cl. B26d 7/12
U.S. Cl. 83—174 7 Claims

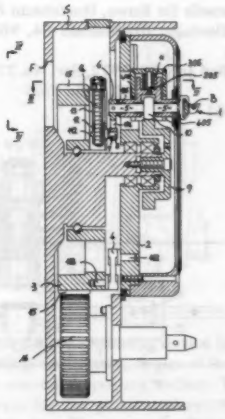


A skin splitting machine having a band blade entrained over spaced pulleys. A pair of sharpening units are mounted one over and the other below a run of the blade. The sharpening units comprise a grinding disc having a frontal planar surface and are mounted so as to be vertically, horizontally and tiltably movable with respect to the edge of the blade.

3,772,952
DEVICE FOR ACCOMPANYING AND SUPPORTING A CONTINUOUS CIGARETTE ROD IN THE CUTTING AREA

Goffredo Gianese, Bologna, Italy, assignor to AMF Incorporated, White Plains, N.Y.

Filed Aug. 30, 1972, Ser. No. 284,993
Claims priority, application Italy, Sept. 2, 1971, 12897 A/71
Int. Cl. A24c 5/28
U.S. Cl. 83—310 10 Claims



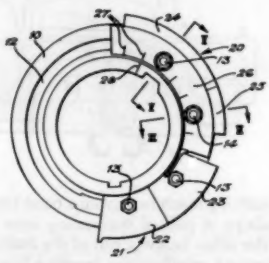
Apparatus for accompanying and supporting a cigarette rod during the cutting of cigarette elements therefrom, which

comprises a rotatable support mounted adjacent a continuously moving cigarette rod, a plurality of cradles pivotally mounted to the rotatable support, means for driving the support to move the cradles in a closed loop path, means mounting the cradles for radial movement with respect to the axis of the rotary support, means for driving the cradles parallel to the continuous cigarette rod in a portion of said closed loop path adjacent to said continuous cigarette rod, and means for maintaining the orientation of the cradles parallel to the continuous cigarette rod as the support is driven.

3,772,953
SLOTTING HEADS

John Anthony Sullivan, Woodsmoor, Stockport, England, assignor to Henry Simon Limited, Chendle Heath, Stockport, Cheshire, England

Filed June 23, 1971, Ser. No. 155,789
Claims priority, application Great Britain, Aug. 12, 1970, 38,765/70
Int. Cl. B26d *1/28*
U.S. Cl. 83—332 **8 Claims**

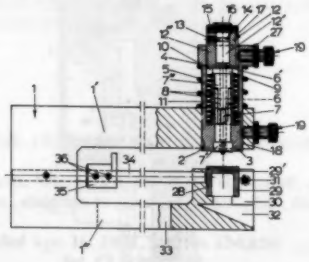


A slotting head of the kind comprising a carrier for at least one male slotting knife blade which is adapted to co-operate with female slotting knives to cut slots in corrugated board or similar material in a converting machine, characterised by the provision of single means, for securing the or each knife blade against movement around the periphery of the carrier and at least one further means angularly spaced from said single means, for securing same against lateral movement with respect to the carrier, whereby only said single means requires manipulation in order to adjust the angular position of the knife blade with respect to the periphery of the carrier.

3,772,954
PIERCING APPARATUS

Theodorus Cornelis De Ruwe, Hartelstein 6, Amsterdam, and Leonardus Honings, Hoofdstraat 54, Mierlo-Hout, both of Netherlands

Filed July 28, 1972, Ser. No. 276,264
Int. Cl. B26d *5/08*
U.S. Cl. 83—561 **16 Claims**

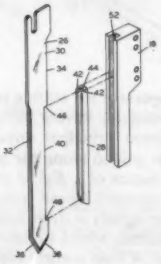


A piercing apparatus including a housing provided with a bore accommodating a punch support slidable axially in the bore. A thrust element is slidable axially in the punch support, the punch support being adapted to receive an axially slidable piercing punch and the thrust element being arranged and adapted to be non-rotatably engaged with and to exert a piercing thrust on a punch received in the punch support. Locating means prevent rotation of the thrust element relative to the support and rotation of the support relative to the housing. At least one said locating means comprises a resiliently-loaded guide element engaging an axially extending groove.

3,772,955
STIFFENED CUTTING BLADE WITH REPLACEABLE EDGE MEMBER

David R. Pearl, West Hartford, Conn., assignor to Garber Garment Technology, Inc., East Hartford, Conn.

Filed Sept. 23, 1971, Ser. No. 183,004
Int. Cl. B26d *1/10*
U.S. Cl. 83—746 **6 Claims**

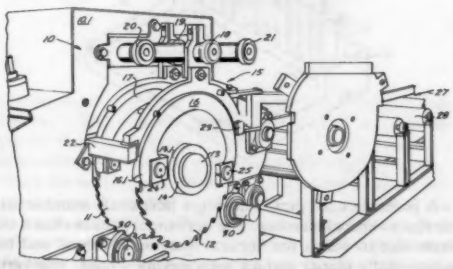


An elongated cutting blade for use in a cutting apparatus for cutting layups of fabric or other similar sheet material is adapted to be held at one end, in a cantilevered fashion, and reciprocated along its longitudinal axis when actively cutting . The blade is a composite part made up of an easily sharpenable edge member, which provides the cutting edge, and a stiffening rib extending along the rear edge of the edge member and serving to reduce lateral and rearward deflection. The rib is preferably made of tungsten carbide and is joined to the edge member by a means which allows the edge member to be removed therefrom and replaced by a new edge member after the edge member has been sharpened or worn beyond a desirable point.

3,772,956
EDGER SAW GUIDE PLUG

James R. McMillan, Box 17, Lone Butte, British Columbia, Canada

Filed May 5, 1971, Ser. No. 140,446
Claims priority, application Great Britain, May 6, 1970, 21,703/70
Int. Cl. B27b *5/28, 7/04*
U.S. Cl. 83—827 **10 Claims**



A vibration damping means for circular saws in which guide plug pairs straddle saw at peripherally spaced positions in plug

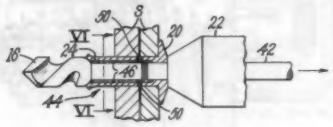
holder. Two plug pairs are spaced diametrically opposite to each other at leading and following positions, a third pair being at about 70° from leading edge pair towards following pair. Plugs are held in holder by pinch bolt means, or are held by expanding plugs radially by pipe threaded stud screwed into pipe threaded bore in plug, the plug having radial slot for expansion.

3,772,957

SELF-DRILLING AND SEALING RIVET

Albert E. Newton, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Filed May 22, 1972, Ser. No. 255,392
Int. Cl. F16b *13/06*
U.S. Cl. 85—68 **2 Claims**



A mandrel-rivet of the pull-to-set type comprises an mandrel head either adapted, or not adapted, to form the installation hole by rotation relative to a workpiece, and its mandrel stem and/or the barrel portion of the rivet are of a configuration to provide space for holding a dormant sealant or adhesive. Rotation of the mandrel relative to the rivet after drilling may provide a melting or curing heat, and subsequent retraction of the mandrel head for rivet setting simultaneously squeezes the sealant through holes in the rivet barrel into the interface region of the joint to provide greater strength and a water-tight seal. A particularly desirable variant contemplates inclusion of a two-part epoxy initially retained in the barrel and divided by the shape of the mandrel section, for instance oval, until the mandrel rotation relative to the rivet will mix the epoxy whereupon the mandrel retraction secures the rivet while exuding activated adhesive for sealing its joint.

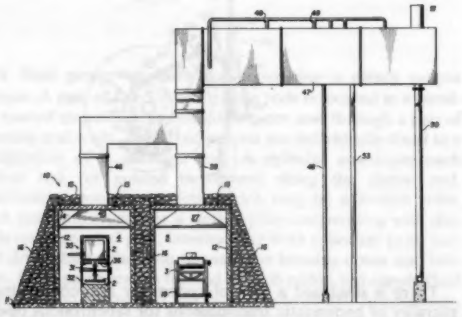
A drilling-pulling mandrel stem optionally useful in the fastener for attaining so-called flush break joints would be formed with multiple indentations which, though not likely to cause the stem to break under rotary drilling or straight pulling, would cause its rupture where desired when subjected by the installing tool, after rivet setting, to the tensile stress of the pulling and additionally to a tilting of the stem.

3,772,958

APPARATUS FOR AMMUNITION DISPOSAL

Thomas W. Mullarkey, Port Chester, N.Y., assignor to Thermal Reduction Corporation, Brooklyn, N.Y.

Filed June 16, 1971, Ser. No. 153,639
Int. Cl. F42b *33/00*
U.S. Cl. 86—1 R **12 Claims**



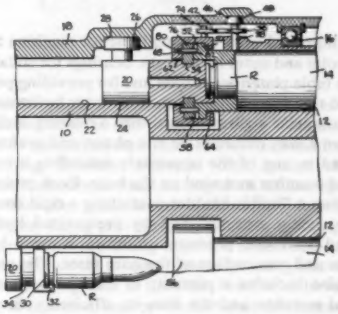
A bunker has therein a light charge and a heavy charge chamber with light and heavy charge conveyors, respectively, extending therethrough. Burners within the light charge chamber ignite light charges therein, and resultant ashes fall through the links of the light charge conveyor onto a cinder conveyor. Within the heavy charge chamber is an explosion chamber having separate preheat, main heat and detection sections. In both the light and heavy charge chambers are located charge presence detectors which activate time relays. Subsequently, the charges are scanned by temperature detectors, whereby if the charges have not been ignited, the conveyors will be shut down. In the heavy charge chamber, the temperature detector may be replaced by an acoustic shock detector.

3,772,959

BOLT LOCKING SYSTEM

Douglas P. Tassie, St. George, Vt., assignor to General Electric Company, Burlington, Vt.

Filed Sept. 1, 1971, Ser. No. 176,989
Int. Cl. F41d *7/04*
U.S. Cl. 89—12 **8 Claims**



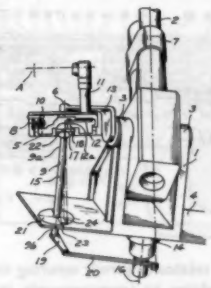
A bolt locking system is disclosed which includes an iris-slide which is cam controlled and which entirely encircles the bolt.

3,772,960

DEVICE FOR A SIGHT

Arnold Johannes Johansson, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 9, 1971, Ser. No. 113,964
Claims priority, application Sweden, Feb. 13, 1970, 1862/70
Int. Cl. F41g *3/10*
U.S. Cl. 89—41 T **7 Claims**



There is disclosed a compensating device for correcting errors in the traversing or elevating angles of the barrel of a gun emplaced on an uneven supporting surface. The device comprises a suspension for the gun barrel permitting traversing and elevating of the gun. The device further comprises a sight supported by a gimbal suspension which in turn is coupled to the gun barrel and the carriage therefor so that the gimbal will

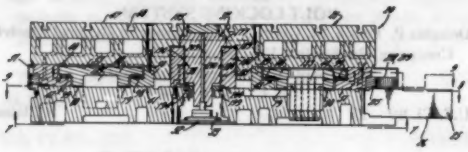
be in a horizontal position independent of turning of the gun barrel. The sight is further so arranged that its optical objective remains locked on to a selected reference point independent of elevating or traversing the gun barrel.

3,772,961

HYDROSTATIC ROTARY TABLE

William R. Siebert, Fond Du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Apr. 6, 1972, Ser. No. 241,724
Int. Cl. B23d *7/08*
U.S. Cl. 90—58 B **5 Claims**



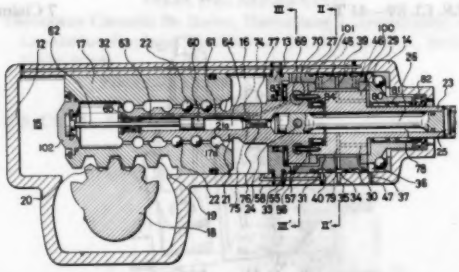
An improved work carrying table for machine tools including pivotal and outer hydrostatic bearings for slidably supporting the table platen on its base and for providing precise indexing and rotation of the platen. The outer hydrostatic bearings each comprise a gib structure with a bearing surface situated between a way mounted on the platen and preload actuators recessed in one of the oppositely extending arms of a fixed preload member mounted on the base. Each preload actuator comprises a flexible bladder containing a rigid core plate, preloading being accomplished by pressurized hydraulic fluid pumped into the pressure chamber formed between the bladder and one surface of the core plate. The work carrying table also includes a plurality of manifolds mounted on the preload member and the base to efficiently direct the pressurized hydraulic fluid to the hydrostatic bearings and the actuators and a backlash-free, preloaded gear drive means to insure precision indexing of the platen.

3,772,962

POWER STEERING MECHANISM

Akira Suzuki, Kariya city, Aichi pref., Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Dec. 24, 1970, Ser. No. 101,356
Int. Cl. F15b *13/16, 9/10*
U.S. Cl. 91—359 **6 Claims**



This invention relates to power steering mechanisms. More specifically, it relates to improvements in and relating to power steering mechanisms fitted on automotive vehicles.

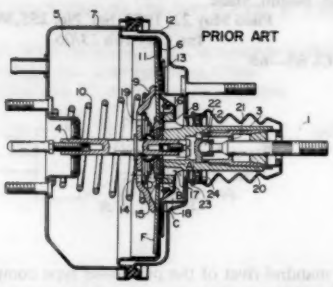
The improvements comprise the provision of means between sector and steering shafts, said means being effective to reduce the driver's manual effort required for turning the steering wheel a corresponding larger degree responsive to quicker turning of the steering wheel and to reduce said manual effort to a lesser degree for slower turning of said steering wheel.

3,772,963

MECHANICAL SERVO MEANS

Yasuo Kita, Obayashi-Aza-Nishiyama, Takarazuka-shi, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Nov. 9, 1971, Ser. No. 196,998
Claims priority, application Japan, Apr. 9, 1971, 46/22414
Int. Cl. F15b *9/110*
U.S. Cl. 91—369 B **1 Claim**



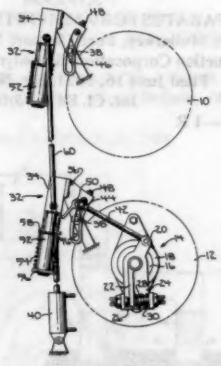
In a mechanical servo means for boosting an input force in which resilient means is disposed between a finger plate and a fulcrum plate to provide a resiliently displaceable fulcrum point therebetween whereby the boosting ratio can be changed in accordance with the input.

3,772,964

NULL AND GAIN ADJUSTMENT MECHANISM AND PROCEDURE FOR HYDROSTATIC CONTROL SYSTEMS

Rodney R. Erickson, Joliet, Ill., and Ralph W. Matthews, New Berlin, Wis., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1971, Ser. No. 211,318
Int. Cl. F15b *11/16, 13/06*
U.S. Cl. 91—411 **4 Claims**



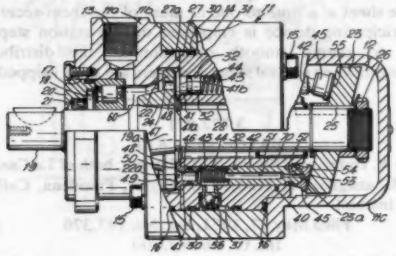
There is disclosed a control system for interconnecting a plurality of hydrostatic transmissions for synchronous operation. The control system includes means to adjust the null position of the pumps and motors and means to adjust the gain between the two machines.

3,772,965

AXIAL PLUNGER PUMP

Yasuo Kita, Kyoto, Japan, assignor to Shimadzu Seisakusho, Ltd., Kyoto, Japan

Filed Nov. 30, 1971, Ser. No. 203,172
Claims priority, application Japan, Nov. 30, 1970, 106,115
Int. Cl. F01b 3/02
U.S. Cl. 91—480 1 Claim



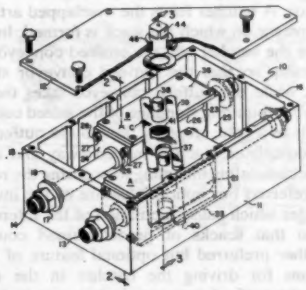
An improved axial plunger pump construction where the thrust and bending moment produced during the piston operation of the plungers and imposed on the rotating shaft are effectively counteracted by flange means thereby to keep the shaft free of such undesirable forces.

3,772,966

FLUID TORQUE OPERATOR

Carl R. Mills, 2626 Diamond Ct., Downers Grove, Ill.

Continuation-in-part of Ser. No. 168,674, Aug. 3, 1971, abandoned. This application June 28, 1972, Ser. No. 267,016
Int. Cl. F01b 15/02
U.S. Cl. 92—66 7 Claims



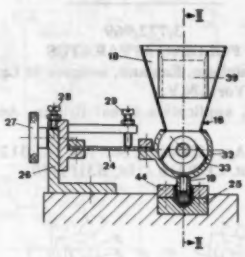
A fluid power operator for generating a rotary output torque. A pair of fixed, linear piston rods is located in a parallel spaced disposition to extend between and through a pair of housing end walls. Two fixed pistons are individually fixed to a midportion of a different rod. A cylinder envelopes each piston rod for guided movement along the piston rod. Mechanical coupling means, which may be a Scotch yoke, rack and pinion gear, or a slotted plate cooperating with disc or lever supported pins, interconnect both cylinders to an output drive shaft extending through the housing cover and bottom. Fluid passageways formed in each piston rod supply fluid pressure and exhaust to the cylinder chambers. Accordingly, the application of varying differential pressures to the opposite sides of both pistons reciprocate both cylinders relative their associated rods to apply a rotating force to the drive shaft through the coupling means.

3,772,967

APPARATUS FOR PRODUCING CIGARETTE FILTERS

Charles Burrus, Boncourt, and Serge Boegli, Zurich, both of Switzerland, assignors to F. D. Burrus & Cie, Boncourt, Switzerland

Filed Oct. 5, 1971, Ser. No. 186,669
Claims priority, application Switzerland, Dec. 1, 1970, 17754/70
Int. Cl. A24c 5/50; B29d 23/00
U.S. Cl. 93—1 C 9 Claims



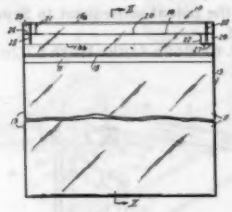
A machine for making cigarette filters of the type within which sections of fibrous and of free-running filter materials are arranged in succession and which has a filler head for feeding free-running filtration material into spaces situated between filter elements or wads arranged on a filter-tip cover strip with which the wads travel continuously forwards, a storage container being provided, the discharge slot of which container constitutes the filling aperture is characterized by the provision of shut-off arrangements operating in conjunction with the discharge slot in the filler head so as to regulate the opening of that slot, and by the fact that the bottom portion of the storage container is made cylindrical and the shut-off arrangements consist of a scoop-shaped closing member, in contact with the inner face of the cylindrical member and capable of rotation about the longitudinal axis thereof.

3,772,968

METHOD OF MAKING DRAW BAND CLOSURE BAGS

Raymond J. Ruda, Chicago, Ill., assignor to Bagcraft Corporation of America, Chicago, Ill.

Continuation-in-part of Ser. Nos. 3,761, Jan. 19, 1970, and Ser. No. 104,414, Jan. 6, 1971. This application July 21, 1972, Ser. No. 273,954
Int. Cl. B31b 1/86
U.S. Cl. 93—35 DS 18 Claims



Draw band closure bags are made from pliable sheet material folded and sealed into bag form and provided with tubular lip tunnel formation within which a flat draw band comprising only the flexible sheet material initially connected but partially separated along a longitudinal line along one edge thereof with a strip of material enclosed within the tunnel and separable therefrom when the draw band is pulled through an opening provided by incising or nicking a limited portion of the sheet material at the tunnel. In one embodiment a flexible

draw band strip is assembled with the sheet material and enfolded in the tunnel. In another embodiment material of the bag body portion which is to form the mouth end of the bag is initially partially separated along one or more lines parallel to its edge to provide for the draw band and is then enclosed either within a separately formed tunnel-providing folded over piece of flexible material heat-sealed to the bag body, or is enclosed within a tunnel made from the bag body material by folding the same upon itself with the draw band portion on the terminal part of the folded material.

3,772,969

FOLDING APPARATUS

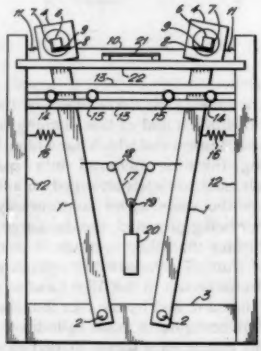
Donald Carter, Rainham, England, assignor to Lever Brothers Company, New York, N.Y.

Claims priority, application Great Britain, Apr. 28, 1971, 11794/71

Filed Apr. 25, 1972, Ser. No. 247,312

Int. Cl. B31b *1/34*; **B31f** *1/10*

U.S. Cl. 93—84 R **3 Claims**



Apparatus for folding two opposite edges of a packaging blank into protective buffers. The edges are inserted into slots in each arm and the arms are then moved together and simultaneously rotated about their longitudinal axes, the edges of the blank being folded around the arms. The folded blank may then be slid from the arms.

3,772,970

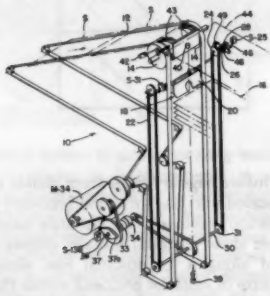
PROGRAMMED SHEET DISTRIBUTING DEVICE

Donald L. Snellman, Seattle; Ernest D. Davis, Richmond Beach, and Dale R. Johnson, Seattle, all of Wash., assignors to Norfin, Inc., Seattle, Wash.

Division of Ser. No. 829,274, June 2, 1969, Pat. No. 3,604,321. This application May 10, 1971, Ser. No. 141,983. The portion of the term of the patent subsequent to Sept. 13, 1988, has been disclaimed.

Int. Cl. B65h *33/00*; **H01h** *67/26*

U.S. Cl. 93—93 C **5 Claims**



A deflector of a sheet distributing mechanism is positioned at selected sheet-receivers or stations in response to the passage of sheets past the deflector. A manually programmed crossbar switch determines the preselected numbers of sheets to be distributed to any one of several sheet-receivers. A sheet stepping switch and a station stepping switch join the programmed crossbars of the crossbar switch when the programmed number of sheets have been received at the selected sheet-receiver so as to index the deflector to the next sheet-receiver. The number of sheets and the number of sheet-receivers programmed may be varied, sheet-receivers may be skipped or the device may operate as a collator by distributing a single sheet at a time to one or more of the sheet-receivers. An anticipating device is employed on the station stepping switch to permit smooth operation of the distributing mechanism when several sheet-receivers are to be skipped.

3,772,971

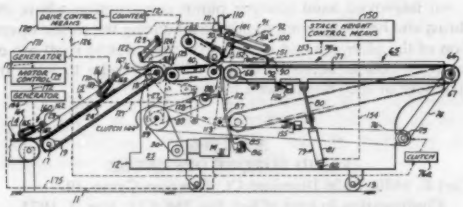
BATCH STACKER

Orville V. Dutro, and Sherman H. Hewson, both of La Canada, Calif., assignors to Mildred L. Taylor, Pasadena, Calif., a part interest

Filed May 27, 1971, Ser. No. 147,370

Int. Cl. B65h *33/00*

U.S. Cl. 93—93 C **26 Claims**



A batch stacker for converting a downstream moving stream of overlapping articles into stacks of said articles. The articles are fed to the stacker in a continuous and overlapped stream by an infeed conveyor and carried away in stacks by an outfeed conveyor. A batcher feeds the overlapped articles to the outfeed conveyor on which the stack is formed. Intermittent drives drive the batcher and the outfeed conveyor in alternate relationship so that the outfeed conveyor stops to receive a stack while the outfeed conveyor takes the stack away, both without requiring stoppage of the infeed conveyor. The batcher acts as a gate, stopping flow to the outfeed conveyor while a completed stack is moved away and accommodating and accumulating incoming flow during the removal operation. A preferred but optional feature of the invention includes a counter which causes actuation of the intermittent drive means so that scacks of predetermined count are delivered. Another preferred but optional feature of the invention is means for driving the batcher in the reverse direction while the outfeed conveyor is driven in its forward direction to carry away a stack so as to provide a more positive separation in the stream.

3,772,972

STACKER

Orville V. Dutro, and Sherman H. Hewson, both of La Canada, Calif., assignors to Mildred L. Taylor, Pasadena, Calif., a part interest

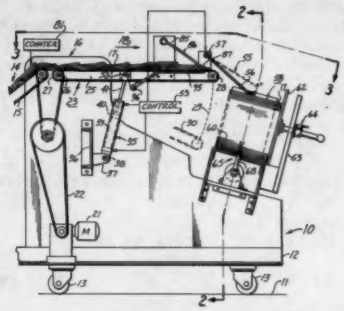
Filed Mar. 20, 1972, Ser. No. 236,136

Int. Cl. B65h *33/12*

U.S. Cl. 93—93 C **5 Claims**

A stacker for converting a stream of overlapped articles into stacked piles of said articles. This stacker has a frame supporting a feeder which receives and transports a stream of overlapped articles in a forward direction of movement to a batcher. The batcher has a discharge end adjacent to which there is a receiving platform, preferably mounted to the frame. A stop member is disposed in the path of the articles and ad-

jacent to the platform to stop the overlapped articles and to align them in an upright stack. A pusher member is provided adjacent to the stop member and is adapted to laterally push completed stacks to one side of the direction of movement. The batcher includes interrupter means which periodically interrupts the flow of articles to the receiving platform after a predetermined number or size of articles has passed it. The steady flow of incoming articles can be accommodated by the batcher during the time that a completed stack is being ejected from the machine.



3,772,973

FLASH AND SHUTTER SYNCHRONIZING MECHANISM

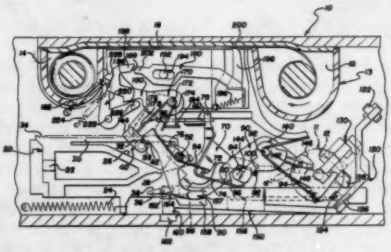
Horst Simon, Stuttgart, and Heinz-G. Bethmann, Stuttgart-Hedelfingen, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 25, 1972, Ser. No. 275,031

Claims priority, application Germany, Aug. 3, 1971, G 71 29 736.4

Int. Cl. G03b *15/04*

U.S. Cl. 95—11.5 R **3 Claims**



A mechanism for synchronizing flash firing and shutter actuation utilizes an independently driven shutter driver and flash firing lever which are moved together to a synchronizing position after operation of the camera release. The driver and lever then separate for independent movement to respectively effect shutter actuation and flash firing.

3,772,974

SINGLE-LENS REFLEX CAMERA WITH AN AUTOMATIC APERTURE CONTROL DEVICE

Jun Shimomura, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

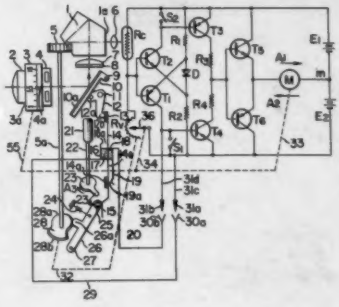
Filed Aug. 22, 1972, Ser. No. 282,718

Claims priority, application Japan, Sept. 2, 1971, 46/78861

Int. Cl. G03b *7/08, 9/02, 9/70*

U.S. Cl. 95—10 CD **3 Claims**

A single-lens reflex camera with an automatic aperture control device comprises a photoelectric element for converting the intensity of light from an object through an objective lens into an electrical signal and disposed so that the light passed thereto through the lens may be intercepted during film exposure. Synchro contacts for flash photography are provided and adapted to close upon shutter release, and aperture control means is provided for varying the aperture opening of the objective lens. A motor for operating the aperture control means is connected with a circuit including the photoelectric element to control the aperture control means in accordance with the electrical signal. Means for stopping the motor is connected with the circuit to cut off a current to the motor upon closing of the synchro contacts, thereby stopping the motor.



3,772,975

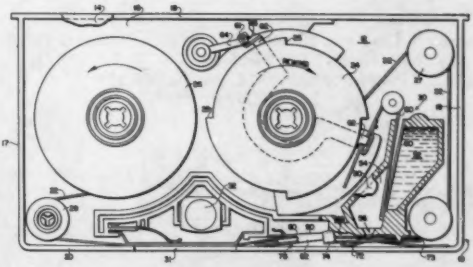
PHOTOGRAPHIC FILM CASSETTE EMPLOYING COATED PROCESSOR VALVE

John F. Batter, Jr., Lincoln; Joseph A. Stella, Peabody, and Albert W. Held, Littleton, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 2, 1973, Ser. No. 320,613

Int. Cl. G03b *17/50*

U.S. Cl. 95—13 **15 Claims**



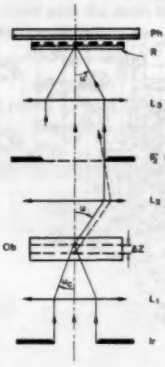
A photographic film cassette having a processing station configured to dispense processing fluid to the film strip following exposure thereof and including a valve-like member carrying a thin surface coating adapted for sealing of the processor nozzle following application of the fluid to the film strip. The coating is located upon the sealing area of the valve and is of material which interacts with the fluid so as to conform to the nozzle and fill any voids in the seal area. Additionally, the coating is utilized to cement the valve in its sealing location.

3,772,976

STORAGE AND RECONSTITUTION OF MICROPHOTOGRAPHIC IMAGES

George Wilhelm Stroke, Stony Brook, N.Y.

Filed June 2, 1972, Ser. No. 259,084
Claims priority, application France, Mar. 6, 1972, 7207723
Int. Cl. G03b 19/02
U.S. Cl. 95—36 3 Claims



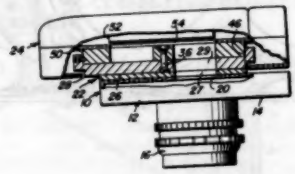
A process for the microscopy of transparent objects, in which the object is placed in a conventional photographic microscope with a diffraction grating system of predetermined spacing disposed in front of the photosensitive layer in which the photographic image is formed. Several images of the object are formed in the one photograph, each corresponding to a given focal plane and a given azimuthal orientation of the grating system with reference to the object. To reconstitute the multiple images recorded in the single photograph, the photograph is illuminated by means of a light source with a small, non-zero numerical aperture and a predetermined spectrum, and an afocal optical system providing at its image focus a real image of the photograph, with appropriate magnification. The beams diffracted by the photograph are selectively masked and the decoded images projected onto a suitable surface, for observation or analysis. The process finds application in three-dimensional micro-photography.

3,772,977

CAMERA WITH MULTIPLE EXPOSURE FEATURE

Eugene S. Guccione, Metairie, La., assignor to Plauche F. Villere, New Orleans, La., a part interest

Filed Nov. 19, 1971, Ser. No. 200,359
Int. Cl. G03b 19/02
U.S. Cl. 95—38 3 Claims



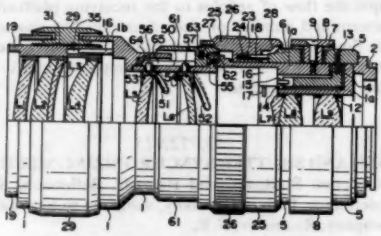
A camera including a body having a front side from which a lens assembly is supported and a rear side from which a film supporting and film plane defining back is supported. The camera body defines a light passage extending therethrough terminating rearwardly at the film plane defined by the back and axially aligned at its forward end with the center axis of the lens assembly carried by the front of the body. The back includes a plurality of openings extending therethrough in front to rear direction and spaced about a predetermined front to rear extending axis laterally offset relative to the center axis of the lens assembly an amount substantially equal to the radial distance the openings are spaced outwardly of the aforementioned predetermined axis. The back is supported from the body for angular displacement about the aforementioned predetermined axis and the latter is generally centered relative to the film format defined at the film plane whereby successive rotation of the back relative to the body to register openings on the back with the center axis of the lens assembly will enable a plurality of individual photographs to be taken by the camera on a single film format.

3,772,978

OPERATION DEVICE FOR OBJECTIVE LENS OF CAMERA

Hiroshi Mito, Omiya, Japan

Filed Oct. 30, 1972, Ser. No. 301,843
Int. Cl. G03b 3/00
U.S. Cl. 95—45 5 Claims



A device wherein the focusing adjustment in an objective lens of a camera, the adjustment for a diaphragm aperture, or the adjustment for zooming is effected by means of a single operation ring.

An operation ring capable of making an axial displacement along the optical axis and rotatable relative to the lens barrel of an objective lens is provided with a first annular strip for transmitting frictionally the rotation thereof at the front edge thereof and a second annular strip at the rear edge thereof, and selectively makes frictional engagement, corresponding to the axial displacement along the optical axis of the operation ring, of either a focusing ring or a zooming ring and an aperture adjusting ring, both to be engaged with the operation ring being axially spaced before and behind each other along the optical axis of the objective lens barrel, so as to be able to selectively adjust them by transmitting the rotation thereof.

3,772,979

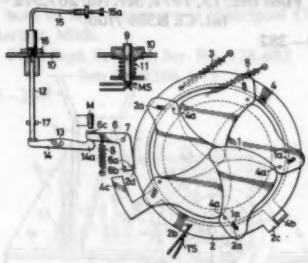
SHUTTER RELEASE DEVICE FOR CAMERA

Toshinori Imura, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed June 12, 1972, Ser. No. 261,756
Int. Cl. G03b 9/08, 7/08
U.S. Cl. 95—53 EB 6 Claims

A device comprises electric exposure control means having an electromagnet the energizing current of which is to be controlled by an exposure control electric circuit, first shutter release means for closing a main switch of the control means and initiating a shutter opening action through a shutter release operation, an attractable member cooperable with the electromagnet to initiate a shutter closing action upon deenergization of the electromagnet, and second shutter release means mechanically associated with the attractable member for mechanically bringing the attractable member to the attracted position and initiating a shutter opening action

through a shutter release operation, the second shutter release means being adapted to permit the attractable member to



return to the unattracted position when freed from the shutter release operation.

3,772,980

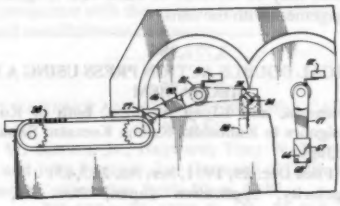
SEMI-CONDUCTOR WAFER PROCESSING APPARATUS

Robert F. Orr, Livermore, Calif., assignor to The Fluorocarbon Company, Anaheim, Calif.

Filed May 8, 1972, Ser. No. 250,914

Int. Cl. G03d *3/00*

U.S. Cl. 95—89 D **11 Claims**



A series of transfer mechanisms automatically move a basket of wafers through a series of processing stations as determined by a timer control. Each mechanism includes a cradle pivotally mounted on a rotating arm and aligned to engage a disc mounted on the end of a rod which supports a basket of wafers. As the arm is rotated, the cradle is moved beneath the disc causing the disc to be received and gripped by the cradle so that the disc and basket are moved in cantilever fashion to the next work station. Continued rotation of the arm withdraws the cradle from the disc.

3,772,981

APPARATUS FOR DEVELOPING PHOTOGRAPHIC RECORDING MATERIALS

Heinrich Huss, Liebigstrasse 1, 6051 Weiskirchen, Germany

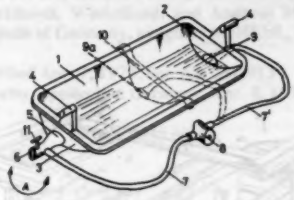
Filed Apr. 21, 1972, Ser. No. 246,483

Claims priority, application Germany, Apr. 24, 1971, P 21 20 218.6

Int. Cl. G03d *3/02*

U.S. Cl. 95—96 **5 Claims**

In developing apparatus for wet treatment of photographic recording materials, a trough in which a rotatable drum defining a support for the recording material is immersed in developer liquid is provided with two inlet orifices which are spaced apart so as to admit the desired liquid in two opposite flows at substantially uniform concentration and temperature of the developer liquid throughout the trough. The liquid is pumped to the second inlet orifice by a circulating pump, preferably mounted on the trough, through a branch pipe. The trough is preferably tippable and the branch pipe flexible. The



trough may be longitudinally subdivided by a partition provided with a further inlet orifice.

3,772,982

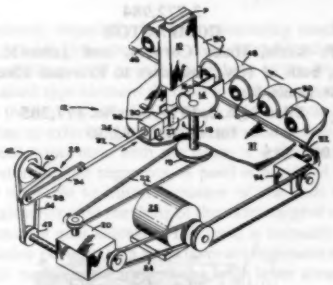
OLIVE STUFFING MACHINE

William W. Smith, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 16,832, March 5, 1970, abandoned. This application Dec. 16, 1971, Ser. No. 208,742

Int. Cl. A23l *1/00*

U.S. Cl. 99—494 **6 Claims**



An olive stuffing machine includes a spiral cutting blade with a helical configuration for simultaneously slicing freeze-dried pimiento held in a feed cartridge and advancing the pimiento for the next cut. A synchronized pusher stuffs the sliced pimiento into aligned pitted olives before the olives are packed in a salt water solution for reconstitution of the freeze-dried pimiento.

ERRATUM

For Class 99—456 see:
Patent No. 3,772,786

3,772,983

COTTON BALE COMPRESSING APPARATUS

Henry L. Nichols, P.O. Box 667, Little Rock, Ark.

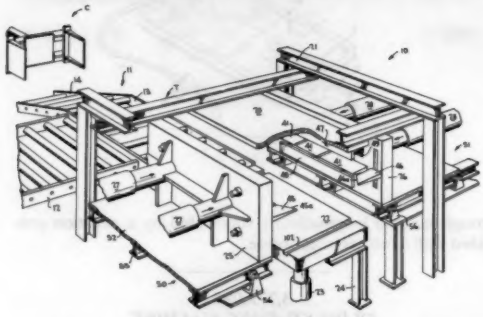
Division of Ser. No. 734,057, June 3, 1968, Pat. No. 3,590,731. This application Apr. 17, 1970, Ser. No. 33,132

Int. Cl. B30b *7/04*

U.S. Cl. 100—53 **10 Claims**

Blade members are provided on the side platens of the compressor to tuck the holding bands into the interior as slack is formed during the compressing operation. Additional blade segments are utilized to tuck the wrapper at the ends of the bale; both the blade members and segments being mounted for movement to accommodate for the reduction in girth in the bale as it is compressed. Spring biased stripper plates for

the blade members and segments are provided on the side platens, which plates also serve to stabilize the bale during the compressing operation. Special stabilized carriage mounting

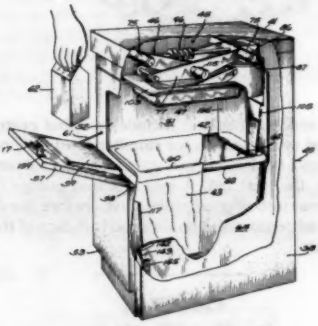


for the side platens and fluid circuitry for automatically sequencing the entire bale handling and compressing operation are provided.

3,772,984
COMPACTOR

Robert F. Karls, Hales Corners, and James H. Enright, Racine, both of Wis., assignors to Emerson Electric Company, St. Louis, Mo.

Filed Sept. 2, 1971, Ser. No. 177,385
Int. Cl. B30b *15/30*
U.S. Cl. 100—215 **25 Claims**

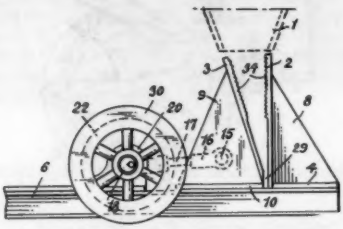


A trash compactor with a housing having a head space at its top, a trash container at its bottom and a trash loading space between the head space and the trash container, a trash loading port in the side of the housing aligned with the trash loading space, a pressure platen and a lazy tong or scissors extension linkage mounted at the top of the housing and operable to move the platen between one or more advanced positions in which the extension linkage spans across the trash loading space and the platen is imposing compacting pressure on trash within the container, and a retracted position in which the extension linkage and platen are withdrawn into said head space, thus leaving the intervening trash loading space open for loading trash into the container through said loading port and without having to withdraw the container from the housing for loading purposes.

3,772,985
CAN CRUSHING APPARATUS

William Girten, Fort Lauderdale, Fla.

Filed Dec. 13, 1971, Ser. No. 207,312
Int. Cl. B30b *1/06*
U.S. Cl. 100—282 **2 Claims**

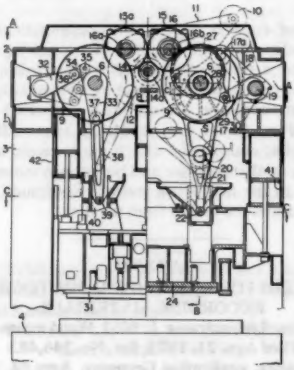


An apparatus for crushing and flattening cans or other receptacles comprising, a pair of crushing plates between which cans to be crushed and flattened are caused to become positioned, one of the crushing plates being a vertical and stationary one, the other plate being angularly disposed and having bodily slidable movement relatively to the fixed crushing plate. Means are provided for slidably moving the movable crushing plate to and from the stationary crushing plate so that cans entering between the plates receive intermittent pressure and release to be crushed and flattened. Opposing faces of the crushing plates may be serrated or otherwise roughened for non-slip engagement with the cans.

3,772,986
MECHANICAL DOUBLE ACTION PRESS USING A LINK MECHANISM

Tameo Kawagoshi, and Kiyoji Aoshima, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo-to, Japan

Filed Dec. 29, 1971, Ser. No. 213,431
Claims priority, application Japan, Dec. 31, 1970, 45/123573
Int. Cl. B30b *1/06*
U.S. Cl. 100—282 **1 Claim**



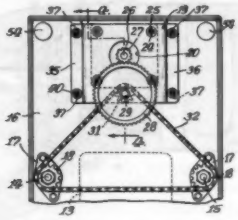
A mechanical double action press using a link mechanism is utilizing four point link mechanism which is the simplest in construction, comprising main shafts extending from front to rear of a crown and having the length substantially equal to that in front to rear of it, one of said main shafts whereon inner slide driving gears being fitted, and another said main shaft whereon outer slide driving gears being fitted. In condition of operating, the speed in an idle stroke is higher than that in drawing work stroke, thereby it is possible to reduce the time required for one cycle.

3,772,987

REFUSE COMPACTOR DRIVE SYSTEM

Charles R. Difley, Harrodsburg, and William Roy McDonald, Danville, both of Ky., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 8, 1971, Ser. No. 178,603
Int. Cl. B30b *1/18*
U.S. Cl. 100—290 12 Claims



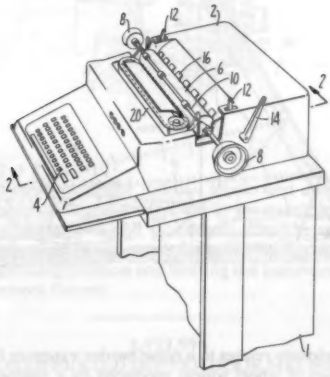
A refuse compactor having a cabinet provided with a bottom base wall and a mounting member removably secured to the base wall for carrying a drive means including a drive motor above the base wall and a power take-off means connected to the ram drive means below the base wall. The mounting member is adjustably positionable on the base wall for adjusting the tension in a chain drive portion of the power take-off means. The drive means may be mounted in the refuse compactor with the cabinet in an inverted position for facilitated installation and servicing.

3,772,988

PRINT CARRIER AND TRANSPORTABLE CARTRIDGE FOR SAME

George W. Bowers, Jr., Hayward; Tony W. Broski, Jr., San Jose, and John Pastrone, Los Gatos, all of Calif., assignors to Memorex Corporation, Santa Clara, Calif.

Filed Mar. 20, 1970, Ser. No. 21,464
Int. Cl. B41j *1/20*
U.S. Cl. 101—111 8 Claims



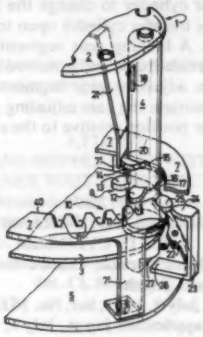
A print carrier for use in a chain printer apparatus which comprises an endless band with a plurality of printing fingers integrally formed with the band. Each of the printing fingers is provided with a print character. The band includes at least one integrally formed continuous strip portion, clocking means, and guide means. Desirably, the print carrier is utilized in a transportable cartridge assembly, which includes means for insuring proper print character alignment. The print characters can be made of plastic injection molded onto each of the print fingers.

3,772,989

PLANETARY DRUM PRINTER WITH MOVABLE GEAR SEGMENTS TO CONTROL TYPE CARRIER ROTATION

Gottfried Burkhardt, Winkelhaid, and Andreas Metschnabl, Nurnberg, both of Germany, assignors to DIEHL, Nurnberg, Germany

Filed Apr. 7, 1972, Ser. No. 241,913
Claims priority, application Germany, Apr. 8, 1971, P 21 17 336.4
Int. Cl. B41j *1/34*
U.S. Cl. 101—110 12 Claims



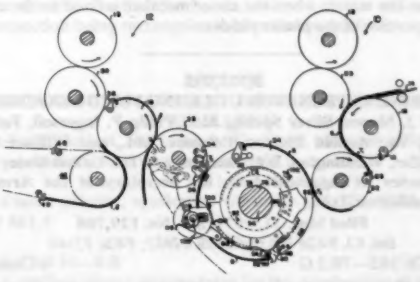
Roller printer, especially for data processing machines, in which a rotatable drum has axial rods rotatable therein and circumferentially spaced near the periphery of the drum, each rod has a raised type element thereon to roll over a member to be printed thereon by rotation of the rod in a printing region. Each rod has an external gear segment thereon and an internal gear segment concentric with the drum is arranged to mesh with the external gear segments. A pawl is provided which is selectively operable to initiate rotation of the rods near the printing region to cause meshing of the external gear segments with the internal gear segment. The pawl is normally latched out of effective position by a latch lever arrangement and electromagnetic means connected to the latch lever arrangement is energizable for selectively moving the latch lever to release the pawl for movement into effective position.

3,772,990

SHEET HANDLING APPARATUS FOR A PRINTING PRESS

Willi Weisgerber, Johannisberg/Rheingau, Germany, assignor to Miller Printing Machinery Co., Pittsburgh, Pa.

Filed Mar. 23, 1972, Ser. No. 237,446
Claims priority, application Germany, May 27, 1971, P 21 26 258.8
Int. Cl. B41f *21/06*
U.S. Cl. 101—230 8 Claims



Gripper devices, positioned on a transfer cylinder are arranged to release the sheet front edge either as the sheet front

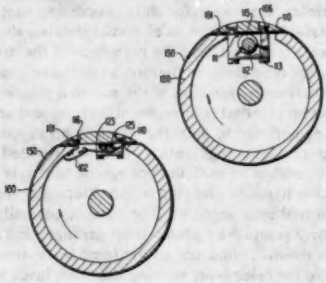
edge is tangent with the adjacent perfecting cylinder for printing on the same side of the sheet or when the sheet trailing edge is tangent to the perfecting cylinder for reversing the sheet and printing on both sides of the sheet. The gripper devices are opened by a cam mounted on a semicircular cam adjusting gear segment, and the gear segment is, in turn, mounted coaxially with the transfer cylinder shaft. A second gear meshes with the cam adjusting gear segment and is supported on a cam adjusting shaft journaled in the press frame. Rotation of the cam adjusting shaft rotates the cam adjusting gear segment and the cam mounted thereon relative to the axis of the transfer cylinder to change the location at which the grippers on the transfer cylinder open to release the front edge of the sheet. A locking gear segment is pivotally connected to the press side frame and is moved into meshing relation with the cam adjusting gear segment by an eccentric locking shaft to maintain the cam adjusting gear segment in a preselected angular position relative to the axis of the transfer cylinder.

3,772,991

MEANS FOR MOUNTING A DYE-TRANSFER MATRIX TO A PLATE CYLINDER

Seiichi Taguchi; Sigeru Tezuka; Takeshi Tomotsu, and Eiichi Mizuki, all of Asaki, Japan

Filed July 9, 1971, Ser. No. 161,037
Claims priority, application Japan, July 9, 1970, 45/60164
Int. Cl. B41f *1/36, 29/04*
U.S. Cl. 101—415.1 **6 Claims**



Apparatus for mounting a matrix on a plate cylinder in a dye-transfer apparatus, wherein the plate cylinder is provided with a cut away portion, and a cover member has a shape that is complementary with the shape of the cut away portion. A register pin is provided on the surface of the cut away portion for engaging one end of a matrix mounted thereon, and a fixture is provided for fixing the other end of the matrix to the surface of the cut away portion. A cylindrical member, mounted within the plate cylinder or the cover, is urged toward the surface of the cut away portion by spring means to tension the matrix when the cover member is fixed to the cut away portion of the plate cylinder.

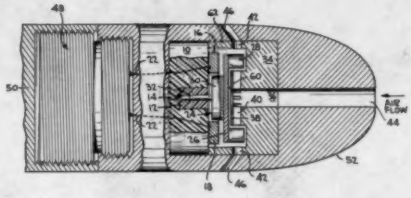
3,772,992

TURBINE ALTERNATOR UTILIZING FLUID BEARINGS

Ward J. Moore, Silver Spring, Md.; Philip F. Ingersoll, Fairfax, Va.; Arnold Richter, Potomac, Md., and William L. Kieffer, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 31, 1971, Ser. No. 129,708
Int. Cl. F42c *15/32;* **H02k** *21/12;* **F42c** *15/40*
U.S. Cl. 102—70.2 G **6 Claims**

A turbine alternator for use in ordnance projectiles that obviates the need for mechanical bearings as journal means therefor. The moving part of the alternator is maintained in the proper position by a pressure differential created by the ram pressure developed by the projectile as it moves through the fluid medium in accordance with a well-known law of physics known as Bernoulli's Principle. The electrical output



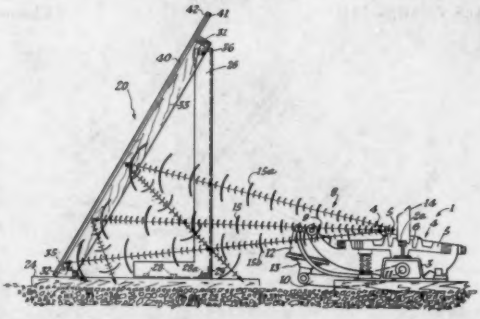
from the alternator can be used as a power source in a conventional bomb, rocket or similar projectile. The elimination of the expensive and fragile mechanical bearings provides an unlimited operational life for the alternator.

3,772,993

NOISE ABATING BARRIER

Peter M. Noble, Valencia, and John H. Carey, Churchill Borough, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Feb. 23, 1972, Ser. No. 228,505
Int. Cl. B61k *13/00*
U.S. Cl. 104—1 R **10 Claims**



This disclosure relates to a noise barrier structure for reducing the level of wheel squeal produced by a railroad car retarder. The barrier structure includes a row of supporting ties disposed on each side of the car retarder. An L-shaped steel column is secured to each of the supporting ties. A rectangular wooden mounting frame has a top section which is secured to the upper ends of the columns and has a bottom section which is secured to the top surfaces of the supporting ties. A canted solid wall structure including a plurality of corrugated panels are disposed in side-by-side relationship. The panels are securely fastened to the frame so that the sound of the wheel squeal is partially absorbed by the wall and is reflected by its surface into the surrounding ballast.

3,772,994

SHOPPING CART CONTROL SYSTEM

Cesar A. Juarbe, 2290 S. W. 2nd Terrace, Miami, Fla.

Filed Mar. 13, 1972, Ser. No. 233,876
Int. Cl. E01b 5/04
U.S. Cl. 104—140 2 Claims

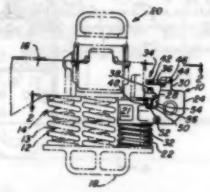
A shopping cart control system for preventing the theft of shopping carts in which a track mounted on the ground and extends from a store to the automobile parking area. The shopping cart is connected by a chain to a member slidably mounted in the track, but not removable therefrom whereby the shopping cart can only travel along a defined path. The over-all concept comprehends an attachment that lends itself to being mounted on shopping carts currently in use.

3,772,995

RAILWAY BOGIE SPRING GROUP SNUBBER ASSEMBLY

James F. Wright, Pittsburgh, Pa., assignor to A. Stucki Co., Pittsburgh, Pa.

Filed Nov. 15, 1971, Ser. No. 198,659
Int. Cl. B61f 5/06, 5/12; F16f 9/32
U.S. Cl. 105—197 DB 10 Claims



A snubber assembly for railroad trucks and more particularly a snubber assembly interposed in the spring group intermediate a bolster end and side frame with the snubber assembly having improved means for retaining the snubber in a relative operating position and limiting the transverse and vertical movement thereof.

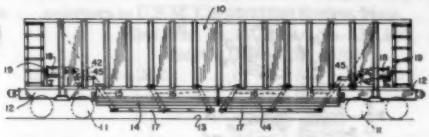
3,772,996

MOTOR OPERATED HOPPER DOOR MECHANISM ACTUATES LATCH

James J. Schuller, Dolton, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed July 14, 1972, Ser. No. 271,964
Int. Cl. B61d 7/02, 7/18, 7/28
U.S. Cl. 105—240 4 Claims

A locking latch device for securing the door operating lever arrangement in a railway hopper vehicle. Locking hook members are pivotally attached to the door operating pneumatic cylinder and through camming action moved out of locking restraining engagement with the door operating lever when the pneumatic cylinder is operated. A leaf spring lock biasing arrangement mounted on the pneumatic cylinder engages the



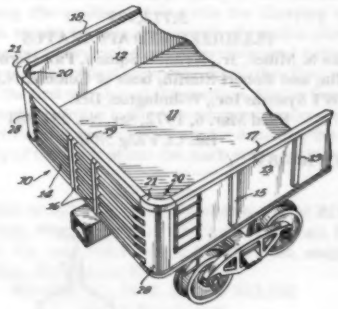
locking hooks to maintain the locking arrangement in engagement with the door operating lever.

3,772,997

GONDOLA AND HOPPER CARS WITH IMPROVED CORNER WALL CONSTRUCTION

James C. Heap, Munster, Ind., and Lee H. Shils, Flossmoor, Ill., assignors to Thrall Car Manufacturing Company, Chicago Heights, Ill.

Filed Jan. 24, 1972, Ser. No. 220,043
Int. Cl. B61d 7/00
U.S. Cl. 105—406 R 2 Claims



Improvement in a railroad gondola or hopper car having metal end walls and metal side walls of metal plate, comprising horizontal tubular metal top chords at the outside top edges of the end walls and side walls, a hollow tubular corner connection having a quarter circle ring section, at each of the four corners of the car with one end portion of each connection joined to the end of a side wall tubular chord and the other end portion of the connection joined to the end of an end wall tubular chord, said corner connection between the ends of the chords joined thereto being at least as large externally in lateral section as the chord ends, and said chords and corner connection being rectangular in lateral corss-section.

3,772,998

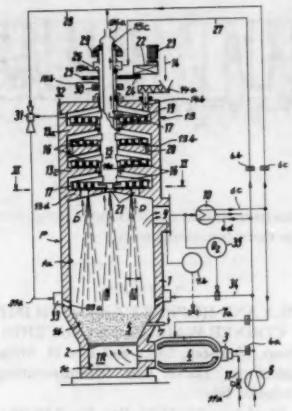
METHOD OF AND APPARATUS FOR THE COMBUSTION OF SLUDGE

Richard Menigat, Dietzenbach, Germany, assignor to Mettalgesellschaft AG, Frankfurt am Main, Germany

Filed July 9, 1971, Ser. No. 161,071
Claims priority, application Germany, July 29, 1970, P 20 37 561.5
Int. Cl. F23g 7/00
U.S. Cl. 110—8 R 7 Claims

A method of and an apparatus for the combustion of sludge obtained from a clarifier in the purification of water, wherein the clarifier sludge is passed through a multistage drier above

a fluidized-bed furnace in which it is predried with the waste mass of the latter. As the wastes dry, they are comminuted and



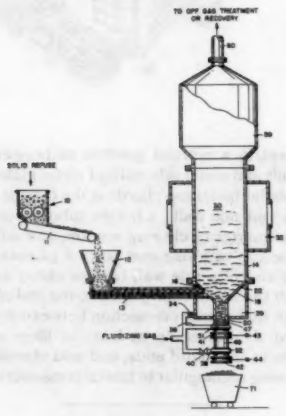
distributed over the cross section of the fluidized-bed furnace for burning therein.

3,772,999

FLUIDIZED BED APPARATUS

Clarence S. Miller, Jr., Kennett Square, Pa.; Herbert Kenneth Staffin, and Robert Staffin, both of Colonia, N.J., assignors to AWT Systems Inc., Wilmington, Del.

Filed Mar. 6, 1972, Ser. No. 231,981
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **6 Claims**



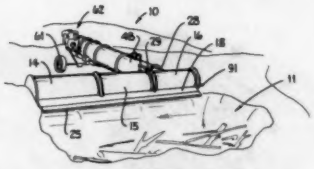
An improved fluidized bed apparatus for combusting or reacting mixtures of combustible and non-combustible waste matter is disclosed. The improvement resides in a distributor plate having sides sloping toward the bottom of the apparatus and having an inlet for solid feed in the side of the distributor plate. A pipe extends downwardly from the base of the distributor plate and functions to capture non-combustibles in the solid feed. A lock is provided which permits non-combustibles to be removed from the apparatus without interruption of operation.

3,773,000

APPARATUS FOR CONTROLLED INCINERATION AIR SUPPLY

Robert D. Applegate, Attica, Ind.

Filed Feb. 24, 1972, Ser. No. 228,915
Int. Cl. F23g *3/02*
U.S. Cl. 110—8 R **1 Claim**



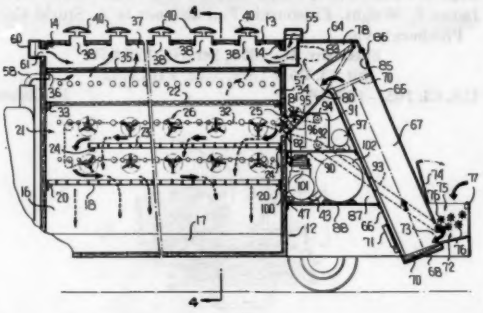
Disclosed is an elongated plenum tube, adapted to be positioned along one margin of a generally rectangular burning pit. The tube is provided with a reinforced nozzle structure extending the length of the tube which discharges air from the plenum in a flat layer or curtain over and into the burning pit. A powered fan supplies the air through a rigid tube intersecting with the plenum tube and a hinge is provided at the intersection permitting movement of the two tubes to a stowed, side-by-side position in which the apparatus can be towed over-the-road from job to job.

3,773,001

INCINERATOR

Frank P. Bottalico, 4417 Fort Dr., Suitland, Md.

Filed Sept. 11, 1970, Ser. No. 71,483
Int. Cl. F23g *5/00*
U.S. Cl. 110—18 R **21 Claims**



This disclosure relates to a mobile incinerator intended for the collection of refuse and the immediate incineration thereof as the incinerator travels from one location to another. The incinerator includes a hopper having a shredder mounted therein. Shredded refuse is moved by an elevator into a storage area and from the storage area through a fire door into a combustion chamber. The refuse is moved through the combustion chamber with ashes passing into an ash pit through a grate and the combustion gases passing upwardly through a filter into an afterburner chamber. Air is added to the unburnt gases and pollution-free gases pass up through a further filter where the hot gases are cooled before escaping from the incinerator.

3,773,002

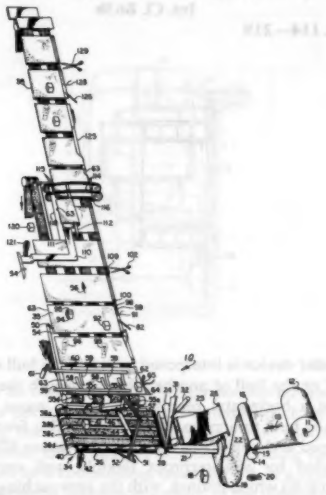
METHOD AND APPARATUS FOR FOLDING AND SEWING HEMS

Perry E. Burton, Box 655, Duluth, Ga.

Filed Dec. 29, 1971, Ser. No. 213,511
Int. Cl. D05b *33/00*
U.S. Cl. 112—121.12 **18 Claims**

A method and apparatus for forming cloth lengths with folded hems from a continuous supply of cloth wherein the

supply of cloth is intermittently fed along a first path to a cutting and transfer station, a predetermined length of cloth is cut from the supply and transferred to a second path extending approximately normal to the first path, a cut end of the cloth length is double folded and sewn, the cloth length is



folded across its length so that its other cut end is positioned on the same side as the hemmed end, and the other cut end is double folded and sewn. The folded and hemmed cloth lengths are folded again and stacked at the end of their second path.

3,773,003

LUBRICANT RECOVERY DEVICE IN SEWING MACHINES

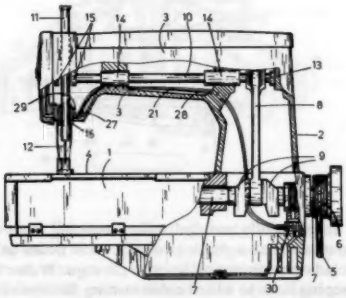
Nerino Marforio, Milan, Italy

Filed May 17, 1972, Ser. No. 254,112

Claims priority, application Italy, June 15, 1971, 25838 A/71

Int. Cl. D05f *71/00*

U.S. Cl. 112—256 **9 Claims**



A lubricant recovery device for the needle bar of a sewing machine including a combined wiping and guide element for removing excess lubricant from the needle bar and directing it into a suitable receptacle from which it is drawn and transferred to a pumping apparatus adopted to recycle the lubricant.

3,773,004

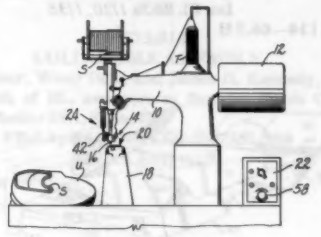
METHOD AND APPARATUS FOR POSITION DETECTING

Joseph R. Ioannilli, Beverly; Ralph E. Karcher, Jr., and Abdullah A. Khambaty, both of Magnolia, all of Mass., assignors to U.S.M. Corporation, Boston, Mass.

Filed Mar. 29, 1972, Ser. No. 239,109

Int. Cl. D05b *1/00, 15/00*

U.S. Cl. 112—262 **16 Claims**



A method and apparatus for detecting a particular position of a first member movable relative to a second member. In the method the first step is selecting a path of relative movement including the position followed by a second step of marking the first member at the position on the path with a mark having a different electrical property from the first member. The first member is then moved relative to the second along the path and the different electrical property of the mark detected for detecting the position. Apparatus for carrying out the method has means for selecting a path of relative movement between the members including the position and a mark having a different electrical property from the first member secured to the first member at the position. Means for moving the first member relative to the second member along the path are then activated at least until means for detecting the electrical property of the mark detect the mark at the position.

3,773,005

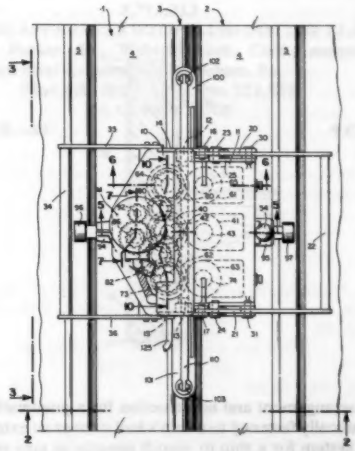
CRIMPING MACHINE FOR STANDING SEAM ROOFS

Donald L. Day, Guysville, Ohio; Charles H. Halstead, Parkersburg, W. Va., and Neil F. Huck, Lowell, Ohio, assignors to Textron Inc., Providence, R.I.

Filed Dec. 11, 1972, Ser. No. 313,753

Int. Cl. B21d *39/04*

U.S. Cl. 113—55 **8 Claims**



A self-propelled machine which can be attached at any point along a standing seam and moved in either direction along the seam for a crimping operation.

ERRATUM

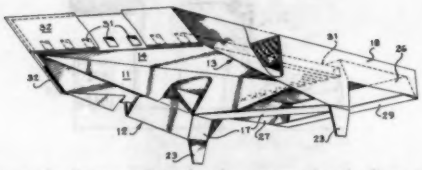
For Class 112—256 see:
Patent No. 3,773,020

3,773,006

HULL CONSTRUCTION

Robert B. Black, 1250 34th Ave., San Francisco, Calif.

Filed Sept. 29, 1971, Ser. No. 184,711
Int. Cl. B63b *1/20, 1/38*
U.S. Cl. 114—66.5 H **9 Claims**



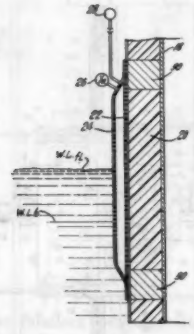
A hull construction in which displacement portions are carried to depend downwardly from the bottom surface of the hull and have a progressively increasing depth and width extending rearwardly along the bottom surface. The displacement portions terminate in a step. A planing surface is disposed adjacent the step to extend laterally across the bottom surface in a direction defined between the port and starboard chines of the hull and in spaced relation beneath the hull. The displacement portions and bottom surface serve to form flow passages commencing forwardly beneath the bottom surface, progressively diminishing in cross-section rearwardly beneath the hull, and terminating above the planing surface.

3,773,007

BUMPER FOR SHIP'S HULL

Richard A. Haisch, Clark, N.J., assignor to Esso Research and Engineering, Linden, N.J.

Filed June 25, 1971, Ser. No. 156,885
Int. Cl. B63b *59/02*
U.S. Cl. 114—219 **5 Claims**



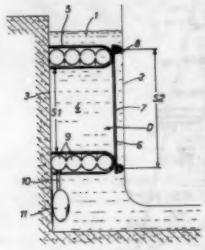
An arrangement and construction for a pneumatic bumper mechanically fastened to a ship's hull or over an external insulation system for a ship to absorb impacts as may result from docking and to prevent damage to the ship's structure or external insulation system. The bumper is filled with a suitable gaseous material and is disposed along the sides of the ship so as to cover the waterline area.

3,773,008

FENDER DEVICE FOR SHIPS AND OTHER BOATS

Paul Francois Guienne, Paris, and Jacques Francois Robert Prouhet, Les Clayes-sous-Bois, both of France, assignors to Bertin & Cie, Plaisir, France

Filed Jan. 26, 1972, Ser. No. 220,799
Claims priority, application France, Jan. 27, 1971, 7102689
Int. Cl. B63b
U.S. Cl. 114—219 **11 Claims**



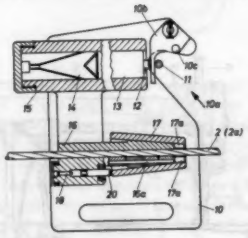
A fender device is interposed between the hull of a ship and a wharf or the hull of another ship to absorb the shocks and generate a horizontal repulsion force to move them apart when they tend to approach each other. This fender device is submerged and comprises a deformable water-filled chamber surrounded by a waterproof flexible wall ending with a peripheral lip which defines, with the approaching structure, a daylight clearance for the leakage of water from the chamber upon crushing of the latter due to the approach movement.

3,773,009

DEVICE FOR CUTTING THE ANCHOR CABLES OF SEA MINES

Otto Pecksen, Herrenalb, Germany, assignor to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Karlsruhe, Germany

Filed Dec. 27, 1971, Ser. No. 212,021
Claims priority, application Germany, June 5, 1971, P 21 28 147.0
Int. Cl. B63g *7/04*
U.S. Cl. 114—221 A **12 Claims**



Two substantially parallel mine-sweeping lines are hauled by a boat, such as a mine sweeper, with floats at their ends which cause the sweeping lines to diverge. Water kites cause the sweeping lines to which cable cutting devices are attached, to move at a predetermined depth. Each cutting device comprises a mine anchor cable engaging member which owing to the pressure of an anchor cable against it releases first a mechanical impact member which, in turn, actuates a piezoelectric sensor whose voltage impulse ignites an explosive charge on said member destroying or cutting the anchor cable.

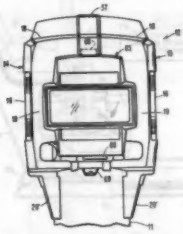
Subsequently, a second explosive charge on said member is ignited, which releases the cutting device from the mine-sweeping line.

3,773,010

COWL FOR OUTBOARD MOTOR

Raymond L. Elingsen, Oshkosh, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Aug. 7, 1972, Ser. No. 278,237
Int. Cl. B63h *21/26*
U.S. Cl. 115—17 10 Claims



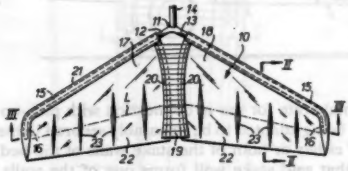
A cowl for an outboard motor comprises two members having their rear portions hingedly connected to each by a common abutting member. Each of the hinges on the common abutting member has a tapered element extending therefrom for disposition in a cooperating tapered hole in a frame supported by the engine to provide support of the members on the engine. The front portions of the two members are spaced from each other to provide ready access to all adjustments of the engine by mere removal of a front shield, which closes the space between the two members. The front portions of the two members are releasably connected to each other by latches.

3,773,011

PROPULSION FIN FOR A FLOATING BODY

Jean Gronier, Rourte du Puntatou 40, Leon, France

Filed Feb. 17, 1972, Ser. No. 227,524
Claims priority, application France, Mar. 8, 1971, 7107893
Int. Cl. B63h *1/36*
U.S. Cl. 115—28 R 18 Claims



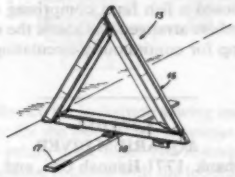
A propulsion fin for a floating body comprises a flat member adapted to be coupled externally to said body and extends, when at rest, in a plane substantially parallel to the direction of forward movement of said body, said member being intended to oscillate with a propulsive action during operation and comprising a diaphragm supported by a rigid frame coupled to said body, said frame extending laterally and towards the rear and being open at the rear so that the rear edge of the diaphragm is free, said diaphragm being constructed and mounted so as to be elastically deformable and having, when at rest, a mean position on said frame in which it is stretched with a pre-determined tension, and is mounted angularly movable on the frame in such manner as to move, during operation, from one side of said mean position to the other between two extreme positions in which the tension of the diaphragm is greater than said pre-tension, and in which the diaphragm is inflated in the form of a pocket and makes an angle with said mean position, starting from the frame. The invention is particularly applicable to floating bodies for water sports.

3,773,012

COLLAPSIBLE ASSEMBLY

Henry Lindner, Wood Dale, and James D. Kennedy, Streamwood, both of Ill., assignors to Beatrice Foods Co.-Elgin Molded Plastics Div., Elgin, Ill.

Filed Apr. 16, 1973, Ser. No. 351,309
Int. Cl. E01f *9/10*
U.S. Cl. 116—63 P 6 Claims



A collapsible assembly usable as a warning device, as for a vehicle stalled on a thoroughfare. The assembly has three leg members which coact to form a triangle. End portions of each leg member are fitted with hinge means adapting the assembly to exist either in an assembled configuration or in a collapsed configuration. When collapsed, the assembly has hinge means disconnected. In the event of breakage, individual leg members can be replaced separately.

3,773,013

COATING APPARATUS WITH FLUID DOCTOR BLADE

Calvin E. Parker, Sr., Walnut Creek, Calif., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 4, 1972, Ser. No. 223,535
Int. Cl. B05c *11/06*
U.S. Cl. 118—63 9 Claims

Fluid doctor means operative on each face of a vertically traveling web are each disposed askew to both the vertical and horizontal related to the path of web travel. The dispensing slot of said means is of varying width.

3,773,014
FISH FARM
Herbert J. Ewald, Jr., P.O. Box 1167, Karnes City, Tex.
Filed Mar. 7, 1972, Ser. No. 232,439
Int. Cl. A01k *61/00*
U.S. Cl. 119—3 **20 Claims**

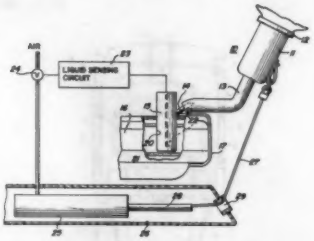
There is disclosed a fish farm comprising a tank having a plurality of chambers arranged one above the other and means including a pump for continuously circulating water through the chambers.

3,773,015
AQUARIUM DIVER
Roy W. Cruickshank, 1771 Hannah Cir., and Jack O. Knight, 2160 N. Connell Ave., both of Simi Valley, Calif.
Filed Mar. 27, 1972, Ser. No. 238,053
Int. Cl. A01k *64/00*
U.S. Cl. 119—5 **4 Claims**

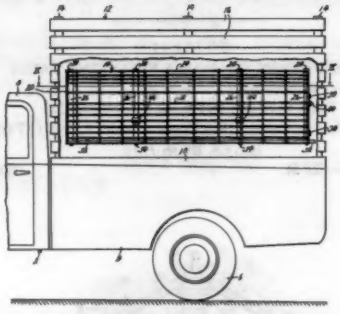
A novel valve arrangement is used to control the release of air from the helmet of a miniature diver so as to cause the diver to periodically dive and ascend within an aquarium tank. The cycle period can be varied by controlling the rate at which air is supplied from a conventional aquarium air source. The diver is slidably mounted on a hollow tube for movement between first and second stations. At the first station, the tube has an opening to admit air to the interior of the diver to increase its buoyancy. The admitted air is retained in the diver until it reaches the second station. The tube has a necked down portion at the second station to release the air contained within the diver.

3,773,016
MILKER CONTROL
Lyle L. Needham, Bellwood, and Don W. Fitzpatrick, Downers Grove, both of Ill., assignors to Babson Bros., Co., Oak Brook, Ill.
Filed Jan. 31, 1972, Ser. No. 222,134
Int. Cl. A01j *05/04*
U.S. Cl. 119—14.08 **22 Claims**

A control circuit for an automatic milker unit includes a circuit for sensing the flow of milk from each teat cup. When the flow ceases, the liquid sensing circuit actuates a time delay circuit which in turn operates to cause a pneumatic piston to remove the teat cup from the animal. A dribble or sloshing of milk during the time delay does not prevent teat cup removal. However, a resumption of steady milk flow for an extended period of time during the delay will prevent removal of the teat cup until a subsequent cessation of milk flow. A circuit is provided for disabling the sensing circuit for a period of time to permit the operator to attach the teat cups at the start of the milking operation. The four sensing circuits of the milker unit are connected with an output circuit which detects the absence of milk flow from all four quarters of the animal and produces a "not milking" signal for energizing indicators or other milking system devices. The output circuit also produces an inverse "milking" signal to energize a motor for supplying feed to the animal or operate other devices so long as milk is flowing.



3,773,017
ANIMAL CRATE FOR PICK-UP TRUCKS
John H. Johannes, Rt. 1, Robinson, Kans.
Filed Apr. 27, 1972, Ser. No. 248,252
Int. Cl. A01k *29/00*
U.S. Cl. 119—17 **6 Claims**

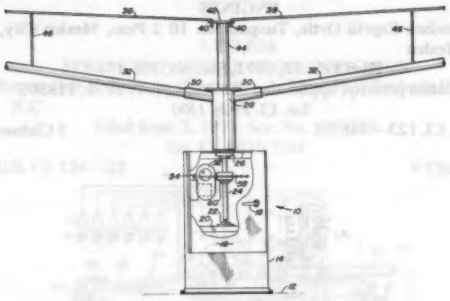


An animal crate for use in connection with pick-up trucks, said crate being adapted to be releasably secured to the exterior side of either or both of the stake walls of the bed of said truck so that said stake wall forms one of the walls of said crate, and having novel attaching means adapting it to be affixed to virtually any stake wall, regardless of the width and spacing of the slats of said wall.

3,773,018
HORSE WALKER
Terence C. Profughi, Chagrin Falls, Ohio, assignor to Technical Metal Processing, Inc., Cleveland, Ohio
Filed July 13, 1972, Ser. No. 271,582
Int. Cl. A01k *15/00*
U.S. Cl. 119—29 **5 Claims**

Horse walker apparatus is mounted on a surface, usually the ground or a concrete substrate. It includes a hub mounted on a drive shaft and spokes projecting radially from the hub. Horses are tethered to remote ends of the spokes, and when the hub rotates the horses are walked or led around in a circle to

cool them following vigorous exercise, such as a race. A motor is connected to the drive shaft through a speed reducer and a chain drive connected to a sprocket wheel mounted on the



shaft. The sprocket wheel is mounted on the shaft by means of a slip clutch, which prevents overload on the motor and a slipping between the two, should the resistance of the horses being walked exceed a predetermined adjustable amount.

3,773,019

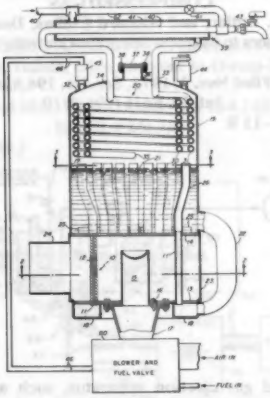
HEAT TRANSFER STRUCTURE

William H. Hapgood, Brookline, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Sept. 1, 1971, Ser. No. 177,024

Int. Cl. F22b *1/12*

U.S. Cl. 122—33 **16 Claims**



A heat transfer system in which circulation of a liquid through a heat exchanger is achieved by having risers filled with fluid consisting of a liquid which partly vaporizes on heating and rises to a condensing region where a heat exchanger, positioned in close proximity to the upper ends of the risers, condenses the vapor portion of the fluid. A downcomer returns the condensed liquid to the lower ends of the risers so that continuous circulation of the fluid through the heat exchanger occurs automatically when heat is supplied to the risers.

3,773,020

LUBRICATING DEVICE FOR LOCKSTITCH SEWING MACHINE LOOPERS

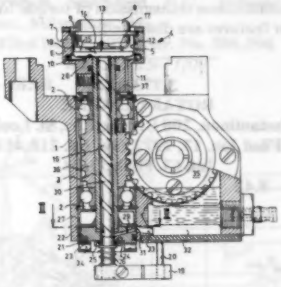
Reinhold Schrudde, Milse, Germany, assignor to Kochs Adler AG., Bielefeld, Germany

Filed Nov. 17, 1971, Ser. No. 199,557

Claims priority, application Germany, Nov. 19, 1970, P 20 56 880.3

Int. Cl. D05b *71/00*

U.S. Cl. 112—256 **1 Claim**



A lubricating device for lockstitch sewing machine loopers, more particularly, for the thread case raceways of vertical axis looptaker of the rotary hook type. The restraining means for the thread case against rotation with the looptaker consist of a slot-shaped part in the bottom of the thread case and a nose cooperating with the slot-shaped port. The nose is a part of a non-rotating shaft, which is received within the tubular looper shaft. The non-rotating shaft is a pump shaft formed externally with a spiral lubricant elevating groove.

3,773,021

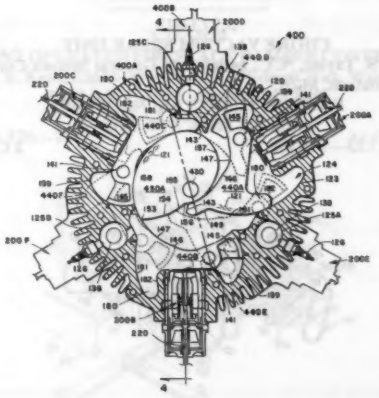
POWER ASSEMBLY

John N. Hinckley, Beloit, Wis., assignor to Beloit College, Beloit, Wis.

Division of Ser. No. 870,331, Sept. 24, 1969, Pat. No. 3,660,978. This application May 8, 1972, Ser. No. 251,267

Int. Cl. F02b *53/08*

U.S. Cl. 123—8.41 **4 Claims**



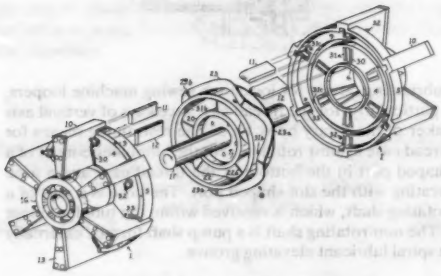
A power assembly is formed from dual rotary internal combustion engine units joined along a common output shaft. Each engine includes a plurality of swinging arms spaced uniformly in a rotor chamber with a rotor on the output shaft engaging the arms in the housing to control and exhaust strokes, and inward power strokes of each of the arms. Each

arm includes an outwardly tapered, wedge-shaped horn member engageable within a recess provided in the adjacent engine housing to define an expandable compression chamber between the housing and each arm and to permit the arms to move freely between the inward and outward positions. The rotor chambers are angularly offset relative to one another to effect a corresponding offset of the arms of each engine and the compression chambers associated with one rotor chamber are coupled to the combustion chambers associated with the other rotor chamber. Thus, the power impulses produced in one of the rotor chambers are offset with respect to the power impulses produced in the other rotor chamber to effect a smooth and continuous transmission of torque to the common shaft. Further features are disclosed.

3,773,022
ROTARY ENGINE

Charles A. Costantinou, 208 Dundee Cir., St. Louis, Mo.

Filed Jan. 17, 1972, Ser. No. 218,411
Int. Cl. F02b *53/08*
U.S. Cl. 123—8.43 **5 Claims**

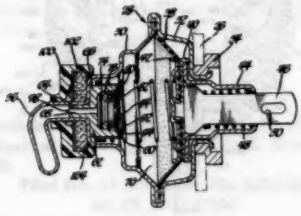


In a rotary internal combustion engine the rotor has two circular webs of sinuous configuration that define, at each side thereof, an inner and an outer ring of power chambers. Gaseous fuel-air mixture is delivered to and compressed within the chambers of the inner ring and is then transferred therefrom to complementary chambers in the outer ring where combustion takes place and drive power is applied to the rotor.

3,773,023
CHOKE VACUUM BREAK UNIT

Roland S. Taylor, N.Y., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1972, Ser. No. 288,403
Int. Cl. F02m *1/10, 1/08*
U.S. Cl. 123—119 F **2 Claims**

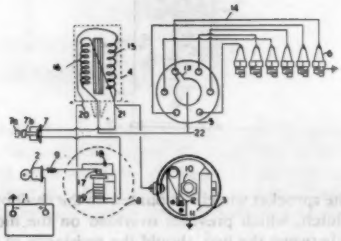


A carburetor choke vacuum break unit has a check valve which restricts flow out of the unit to provide a period of delay between the application of manifold vacuum to the unit and the opening of the choke by the unit. To prevent plugging of the check valve, a purge hole is provided between the check valve and the source of vacuum; this permits a continuous flow of air into the vacuum conduit to prevent pulsations in manifold vacuum from transmitting foreign matter to the unit where it could tend to plug the check valve.

3,773,024
IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Francisco Espriu Ortiz, Tuxpan No. 10 2 Peso, Mexico City, Mexico

Filed Feb. 17, 1971, Ser. No. 116,174
Claims priority, application Mexico, Apr. 7, 1970, 118505
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 DS **3 Claims**

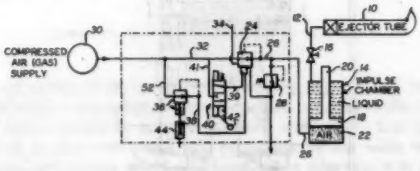


An ignition system for internal combustion engines additionally including a magnetic pulse device connected in the circuitry so as to provide current in the high voltage flowing to the sparkplugs during the time the circuit is closed between the distributor arm and distributor contact from a period before the opening of the breaker points. The circuitry includes a conventional ignition system with the addition of a magnetic pulse device and a double throw selector switch and ballast resistor.

3,773,025
METHOD AND APPARATUS FOR EJECTION BY COMPRESSED GAS

Emil Roeder, Butler, and Richard Collins, Denville, both of N.J., assignors to Marotta Scientific Controls, Inc., Boonton, N.J.

Filed Nov. 2, 1971, Ser. No. 194,826
Int. Cl. F41f *1/04, 3/10*
U.S. Cl. 124—11 R **12 Claims**



Compressed gas ejection apparatus, such as is used for launching torpedos from submarines, has a substantial drop in gas pressure as the article in the apparatus is accelerated to the velocity of the ejection. This invention controls pressure of the gas by a pressure regulator placed between a source of compressed gas and the tube or holder of the ejection apparatus; and the pressure regulator supplies additional gas as the volume of gas increases during the ejection operation. The pressure is controlled and can be maintained at substantially full pressure for the full ejection operation, and can be adjusted to compensate for change in the mass of an article to be ejected, and for changes in the resistance to ejection such as results from variations in the depth of water and relative speed at which an ejection operation may be carried out. The con-

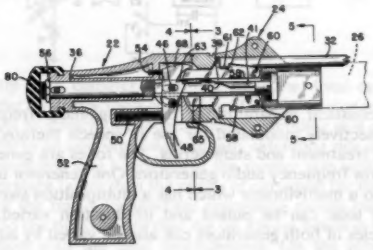
trolled pressure makes possible uniform repeated operations of the ejection apparatus, and also makes possible repeat operations without waiting for an intermediate pressure reservoir to be restored to a predetermined pressure. In the preferred construction, a solenoid operated pilot regulator controls the delivery pressure of a main regulator that supplies gas to the impulse chamber of the ejector apparatus.

3,773,026

SPRING TYPE SPEAR PROJECTING GUN

Bernardino S. Romero, Route No. 3, Box 131, Elizabeth City, N.C.

Filed Sept. 2, 1971, Ser. No. 177,288
Int. Cl. F41b *7/04*
U.S. Cl. 124—22 **6 Claims**



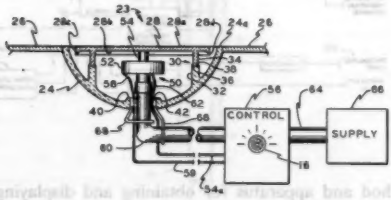
A spear gun with plural spear projecting device having a trigger housing and sear housing releasably secured each to the other and permitting rotation of one with respect to the other so that a launching station is obtained. A barrel is connected with the sear housing which contains at least one spear receiving opening. A trigger actuates a sear which in turn initiates the launching of a spear. The spear gun has a line drop mechanism that is permitted to rotate freely when the trigger is displaced, thus releasing a line that is tethered to a spear. To prevent rotation of the sear housing with respect to the trigger housing, a locking device is provided.

3,773,027

COUNTERTOP HEATING APPARATUS

Edwin D. Dodd, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 15, 1971, Ser. No. 124,168
Int. Cl. F24c *3/04*
U.S. Cl. 126—39 J **4 Claims**



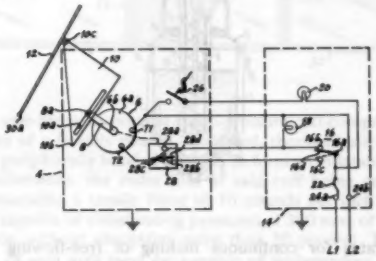
Disclosed in one embodiment is a domestic cooking unit which includes a drip pan, a planar countertop containing at least one opening, and a heating plate located in the opening and to be heated by a gas burner positioned below the heating plate. The drip pan, countertop, and heating plate are advantageously formed from an infrared transmitting, heat-resistant, nonporous, glass-ceramic material having a low thermal expansion coefficient and a low thermal conductivity. The periphery of the heating plate is spaced inwardly from the periphery of the opening to permit flow of combustion products from the gas burner out from the drip pan and to prevent heat conduction between the heating plate and the countertop. A plurality of spaced support means extend between the drip pan and the heating plate for supporting and positioning the heating plate. The drip pan and the countertop can be formed as an integral unit. The cooking surface of the heating plate is flat and preferably disposed in the same plane as the surface of the countertop thereby presenting a flat area for general use when the unit is not being used for cooking.

3,773,028

MOTORIZED DAMPER OPERATOR AND CONTROL

John J. Schreibeis, Smithfield, N.C., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Dec. 9, 1971, Ser. No. 206,396
Int. Cl. F23l *11/00*
U.S. Cl. 126—285 B **6 Claims**



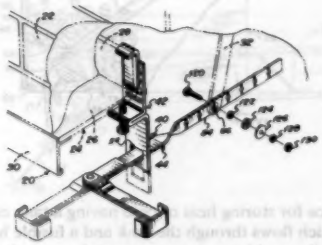
An electric motor driven operator and control for dampers of the gravity return type, such as used in chimney flues for fireplaces. The operator comprises an electric motor-gear speed reduction unit for driving a crank arm which engages with a pivoted member in an elongated slot in the latter. In each revolution of the output shaft of the driving unit the pivoted member opens the damper in the first half revolution, and then allows it to close in the remaining half revolution. The control comprises a two position selector switch, and limit switch operable in accordance with the motor shaft position to cause the motor to stop when the damper is in full open position, or when in completely closed position. Indicating lights are provided to indicate when the damper is in open position, and when the temperature in the region of the damper operator exceeds a predetermined high limit.

3,773,029

FRONT OPERATED FIREPLACE DAMPER CONTROL

Walter B. Kent, 32619 39th Pl., S.W., Federal Way, Wash.

Filed July 1, 1971, Ser. No. 158,888
Int. Cl. F23l *13/02*
U.S. Cl. 126—288 **11 Claims**

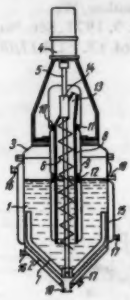


This invention is for a control for the damper of a fireplace. The control may be operated from the front of the fireplace. This invention is adaptable for use in older and installed fireplaces and is also adaptable for use in new fireplaces or fireplaces which are about to be installed.

3,773,030
APPARATUS FOR CONTINUOUS MELTING LOOSE PRODUCTS

Semen Fedorovich Sholk, Zvenigorodskoe Shosse, 3a, kv. 223; Jury Ruvimovich Svidler, Znamenskaya ulitsa, 35, kv. 22; Viktor Petrovich Seleznev, Bolshaya Filevskaya ulitsa, 41, korpus 5, kv. 2, and Zinaida Petrovna Komova, 1 Novo-Tatarskaya ulitsa, 3, kv. 4, all of Moscow, U.S.S.R.

Filed Aug. 25, 1971, Ser. No. 174,762
Int. Cl. F24h *1/00*
U.S. Cl. 126—343.5 A 5 Claims

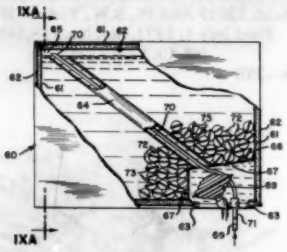


Apparatus for continuous melting of free-flowing solid products containing a reservoir inside of which is disposed a heating pipe with one end in communication with a connection for the charging of free-flowing solid product and the other end being open. In the pipe is inserted a worm. Openings are formed in the wall of said pipe for recirculation of a molten mass.

3,773,031
DEVICE FOR STORING HEAT OR COLD

Nikolaus Laing, and Ingeborg Laing, both of Hofenerweg 35-37, Aldingen B. Stuttgart, Germany

Continuation-in-part of Ser. No. 855,993, Sept. 8, 1969, abandoned. This application July 9, 1971, Ser. No. 161,215
Claims priority, application Austria, Sept. 9, 1968, 8748/68
Int. Cl. F24h *7/02*
U.S. Cl. 126—400 4 Claims

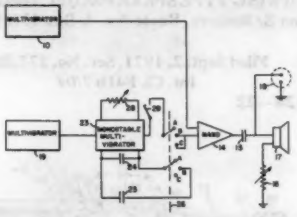


A device for storing heat or cold having a tank containing a liquid which flows through the tank and a fusible heat storage material disposed in one or more containers, and a cooling or heating system which is subjected to heat exchange only with the liquid in the tank. The storage material containers form a system of ducts in the tank to provide a circulation of the liquid through the tank when heat is yielded to or received from the storage material.

3,773,032
ACOUSTICAL APPARATUS FOR TREATING STAMMERING

George Edward Donovan, Gorseinon, and Charles Edward Mark Hansel, Swansea, both of Northern Ireland, assignors to Technology Exchange Inc., Fairview, N.J.

Filed Dec. 3, 1971, Ser. No. 204,663
Int. Cl. A61b *5/12*
U.S. Cl. 128—1 R 8 Claims

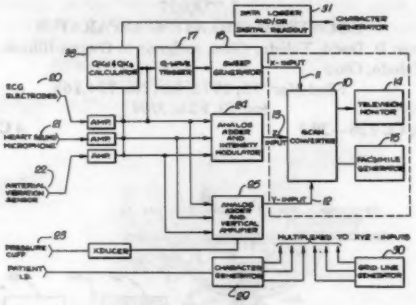


An acoustical apparatus for producing audio frequency tones selectively modulated for use in speech therapy, suppression treatment and stammering. The tones are generated by two low frequency audio generators. One generator is connected to a multivibrator which has a multiposition switch so that the tone can be pulsed and its duration varied. The frequencies of both generators can also be varied by adjustable parameters.

3,773,033
METHOD AND APPARATUS FOR OBTAINING AND DISPLAYING CARDIOVASCULAR DATA

Simon Rodbard, Arcadia, and Bruce E. Mount, Diamond Bar, both of Calif., assignors to City of Hope, Los Angeles, Calif.

Filed Nov. 15, 1971, Ser. No. 198,863
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R 5 Claims



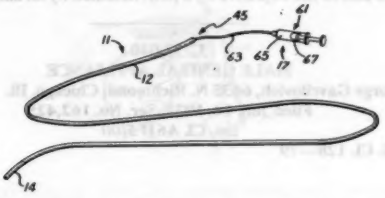
Method and apparatus for obtaining and displaying cardiovascular data by simultaneously sensing the performance of both the heart and an artery during a succession of cardiac cycles. A microphone adjacent the heart and a sensor adjacent an artery are coupled to the input of a cathode ray tube for intensity and/or amplitude modulation of its output. The horizontal sweep of the cathode ray tube is initated at the beginning of each cardiac cycle as by ECG electrodes. Variable pressure applied externally to the artery is also used to establish the quiescent vertical output of the cathode ray tube. In one embodiment, a memory tube temporarily stores the output of the cathode ray tube for visual examination, after which facsimiles can be made if desired.

3,773,034

STEERABLE CATHETER

Marvin Burns, Wilmette; Charles Thomas Ogden, Chicago, and Richard A. Rodzen, Bollingbrook, all of Ill., assignors to ITT Research Institute, Chicago, Ill.

Filed Nov. 24, 1971, Ser. No. 201,912
Int. Cl. A61m 25/00
U.S. Cl. 128—2 M 12 Claims



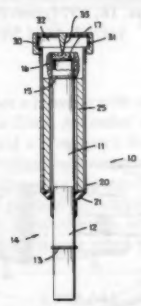
A tip on a catheter is bent to steer the distal end of the catheter by displacing a control fluid within an elongated fluid conduit to stretch one longitudinally extending side of the tip relative to an opposite longitudinally extending side of the tip. The stretched side bends about the shorter side with a radius of curvature larger than the radius of curvature for the shorter side of the tip. A longitudinal restraining means may be applied to the tip to assure that the tip always bends in the same direction with the fluid displacement. On the other hand, other catheters may be bent in several and predetermined directions by providing a plurality of discrete fluid control conduits and by establishing a fluid pressure differential in at least one of the conduits to cause its associated side to lengthen and bend relative to a portion of the tip associated with another control conduit. The catheter may be small in dimension, made inexpensively and restrained against expanding in diameter by a circumferential restraining means.

3,773,035

SPECIMEN OBTAINING, CULTURING AND TESTING DEVICE HAVING A GAS ENVIRONMENT

Michael S. Aronoff, 1906 Sussex Dr., and Michael K. Workman, Rt. 11, both of Bloomington, Ind.

Filed Sept. 5, 1972, Ser. No. 286,015
Int. Cl. A61b 10/00
U.S. Cl. 128—2 W 8 Claims



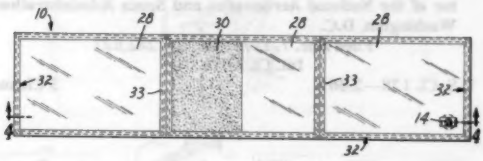
A culturing device for gonorrhea including a CO_2 cylinder having a swab mounted thereon and closed by a rubberlike diaphragm. The swab is projectable from a cylindrical container for obtaining a specimen. The cylindrical container has a threaded cap thereon and contains a culture medium. The cap has a lance mounted thereon which is usable when the cap is closed on the container to puncture the diaphragm to cause CO_2 to fill the cylindrical container. The CO_2 cylinder is movable in the cylindrical container to cause the swab to wipe across the culture medium and thereby cause the specimen to be deposited from the swab on the culture medium.

3,773,036

DISPOSABLE BLOOD PRESSURE CUFF

James H. Weyer, Afton, Ohio, assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation-in-part of Ser. No. 876,778, Nov. 14, 1969, abandoned. This application Dec. 2, 1971, Ser. No. 203,995
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 C 9 Claims



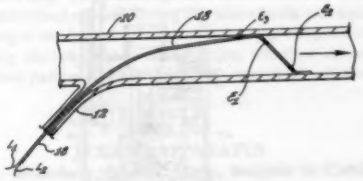
A one-piece, disposable blood pressure cuff comprising two layers of a flexibly pliable, elongated, thermoplastic polymer film peripherally bonded together to form an inflatable pocket therebetween, the outer film of said cuff being capable of withstanding a tensile force of 10 pounds per inch of width and capable of withstanding pressures of 300 mm. of Hg at inflation without elongating more than 20 percent. The inner film of said cuff must be capable of withstanding a tensile force of 5 pounds of force per inch of width and have an elongation of 20 percent or less when the cuff is inflated to a pressure of 300 mm. Hg. The inner elongated film layer is attached to a nontoxic, nonirritating substrate suitable for contact with human skin, said substrate having a compressibility of less than 3/16 inch. The cuff has means for the introduction and evacuation of air from the pocket, means to hold a blood pressure cuff transducer on said substrate and against the skin and means to attach the end of the cuff onto a portion of itself when overlapped and convolutely wrapped around an appendage, thus holding the cuff on during the measurement of a patient's blood pressure.

3,773,037

SIMPLIFIED EXTERNAL FIELD ELECTROMAGNETIC CATHETER FLOW METER

Alexander Kolin, Bel Air, Calif., assignor to The Regents of the University of California, Berkeley, Calif.

Continuation of Ser. No. 32,671, April 28, 1970, abandoned, which is a continuation-in-part of Ser. No. 16,175, March 3, 1970, abandoned. This application Nov. 27, 1972, Ser. No. 309,825
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 F 11 Claims



An electromagnetic catheter-type flow meter is provided which may be introduced, for example, into a blood vessel to measure the blood flow in the blood vessel, and which is constructed to have a minimal diameter so that it may be introduced percutaneously, for example, into a branch of a larger blood vessel with minimum damage. The flow meter of

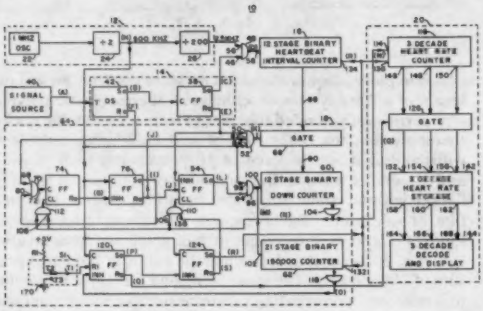
the invention is angulated so as to place its pick-up electrodes adjacent the inner surface of the wall of the blood vessel diagonally or diametrically across the blood vessel from one another; or the catheter may be rigid and straight, and/or pointed as a needle, so that it may be introduced transversely into a blood vessel through a branch vessel or through the wall thereof.

3,773,038

DIGITAL COMPUTING CARDIOTACHOMETER

Hubert E. Smith, Huntsville; John R. Rasquin, Madison, and Roy A. Taylor, Huntsville, all of Ala., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Apr. 7, 1972, Ser. No. 242,027
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 F **5 Claims**



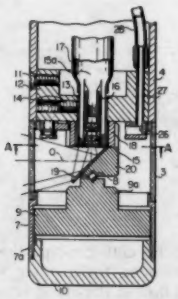
A device for the measurement of heart rate in which the interval between two succeeding heart beats is measured by counting cycles from a fixed frequency source occurring between the two beats and heart rate is computed during the interval between the next two beats by counting the number of times that the interval count must be counted to zero in order to equal a total count of 60 times (to convert to beats per minute) the frequency of the fixed frequency source.

3,773,039

ENDOSCOPE

Toshiyuki Mori; Takeshi Okada; Kunio Kinoshita, and Teruo Ouchi, all of Tokyo, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed July 14, 1971, Ser. No. 162,509
Int. Cl. A61b *1/06*
U.S. Cl. 128—6 **9 Claims**



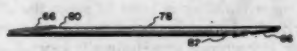
A side viewing endoscope having a forward or distal end member adapted to be inserted into a cavity to be inspected and housing therein a reflecting mirror and an objective for receiving the light from an object located at the side of the distal end member so as to form an image of the object, a control housing connected to the distal end member through an elongated flexible tube and provided with an eyepiece, and an image transmitting optical system extending through the elongated flexible tube for transmitting the image of the object therethrough so as to be viewed through the eyepiece. The reflecting mirror is mounted on a ratchet rotated about the optical axis of the objective by a pawl actuated by an axial force.

3,773,040

MALE GENITAL APPLIANCE

George Gavrilovich, 6635 N. Richmond, Chicago, Ill.

Filed July 14, 1971, Ser. No. 162,425
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **6 Claims**



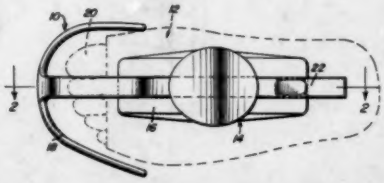
An elongate flexible band or round member is disclosed having interengageable attachment means at the ends to provide a plurality of adjustable fastening points to enable the device to be formed into an encircling restriction of different effective circumferences in accordance with the physiological differences in the male genital organ. The fastening points are characterized by being easily applied and adjusted, providing a positive attachment, easy to manufacture, being comfortable to user and easily detached without discomfort. Various embodiments are disclosed including telescoping members, Velcro type attaching units, and the combination of transverse slots and a hook member, each of which interlock in a manner to form a joint which presents little, if any, undue and uncomfortable pressure points or interfering obstructions during application, use or removal.

3,773,041

TOE GUARD FOR WALKING CAST, SHORT LEG CAST & LONG LEG CAST

Earl M. Bogar, Jr., P.O. Box 4152, Houston, Tex., and Jack Southern, 2210 Maroneal, Houston, Tex.

Filed Nov. 18, 1971, Ser. No. 199,990
Int. Cl. A61f *5/04*
U.S. Cl. 128—83.5 **4 Claims**



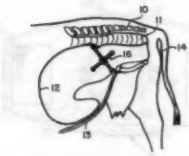
The toe guard incorporates an elongated mounting stem adjustably engageable with the walking tip of a foot cast. The forward end of the stem is rigidly affixed to the central portion of a rearwardly directed arcuate protective bar which encircles the toes and forward portion of the cast in generally spaced overlying relation to the stem itself.

3,773,042

APPARATUS FOR PREVENTION OF RECURRENCE OF PROLAPSED UTERUS

Bert Wier, Rt. 3, Pauls Valley, Okla.

Filed Aug. 30, 1971, Ser. No. 176,198
Int. Cl. A61f 5/46
U.S. Cl. 128—130 1 Claim



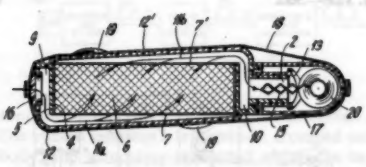
The recurrence of propalapsis of the uterus in an animal after replacing a prolapsed uterus is prevented by a cross-shaped member placed in the pelvic inlet. The arms of the cross-shaped member are resiliently and medially attached so that the cross-shaped member may have the arms aligned for insertion of the device, and, upon release after insertion, the device assumes its cross-shaped configuration and the ends thereof lodge against the walls of the pelvic inlet to retain the same in position and prevent any further prolapse of the uterus.

3,773,043

RESPIRATOR HAVING A MOUTHPIECE ARRANGED LATERALLY OF THE FILTER

Karl-August Wachter, Lubeck, Germany, assignor to Dragerwerk Aktiengesellschaft, Lubeck, Germany

Filed Nov. 10, 1971, Ser. No. 197,266
Claims priority, application Germany, Nov. 20, 1970, P 20 57 093.8
Int. Cl. A62b 7/00
U.S. Cl. 128—147 10 Claims



A respirator includes a housing with an annular interior wall in which is mounted a filter. An outer wall of the housing has an inlet at one side and a flow space from the inlet through a converging passage defined by a cover on one end of the filter and then through a diverging passage after flow through the filter. The diverging passage communicates at the opposite side of the filter with a mouthpiece which is advantageously covered by removable enclosure when not in use.

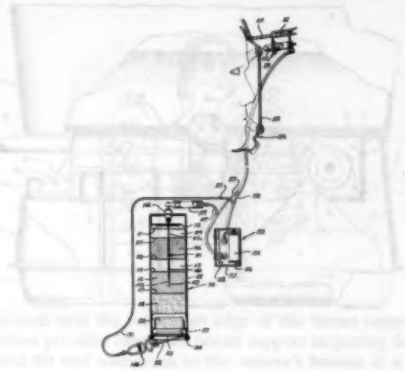
3,773,044

CHEMICAL BREATHING APPARATUS WITH ALARM DEVICE

Richard A. Wallace, 43 Kingscote Garden, Stanford, Calif.

Filed Mar. 10, 1971, Ser. No. 122,658
Int. Cl. A62b 7/10
U.S. Cl. 128—142.6 13 Claims

Chemical breathing apparatus for use by humans and adapted to supply life-sustaining gases to the respiratory tract of a human and having a canister carrying a chemical sorbent for treating the gases to be utilized by the human and an electrically actuated alarm device including means for measuring the resistance of the chemicals for giving a warning as to how much longer the chemical will be effective for treating gases and vapors in hazardous atmospheres.

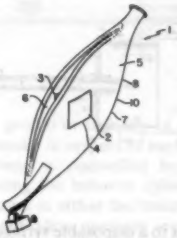


3,773,045

MARKED BREATHING BAG

Antonio Boba, Mount Vernon, Ill., assignor to Mohawk Exchange & Commissions, Inc., Mount Vernon, Ill.

Filed Dec. 20, 1971, Ser. No. 209,687
Int. Cl. A61m 16/00
U.S. Cl. 128—202 2 Claims



A breathing bag used in the anesthetizing process during surgical or like operations consisting of an elongated flexible bag marked with markings of a color that contrasts with the color of the bag. The markings are so colored and arranged that the individual administering the anetsthetic can easily tell by glancing at the bag whether or not the bag is expanding and contracting thereby easily ascertaining whether or not the anesthetized patient is breathing to the operator's satisfaction.

3,773,046

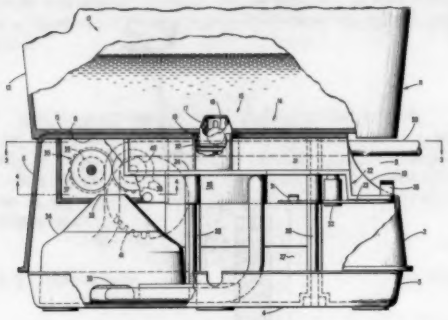
DOUCHE APPARATUS

Arthur J. Rosenberg, Boston, Mass., assignor to Cambridge Biomedical Corporation, Boston, Mass.

Filed Jan. 17, 1972, Ser. No. 218,354
Int. Cl. A61m 1/00
U.S. Cl. 128—230 5 Claims

A douche apparatus of compact design having a water reservoir or container engaged with a magnetically coupled pump positioned in a housing. The pump is also connected to one end of a flexible tube that is normally stored in the hous-

ing. The other end of the tube is connected to a nozzle. The major portion of the tube may be retracted into the housing by



a windup mechanism located within the housing and having a handle accessible from outside the housing.

3,773,047

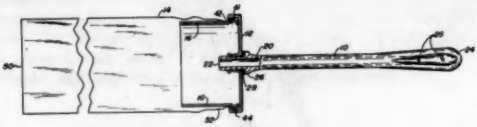
DISPOSABLE SYRINGE

Vincent R. Sneider, 3422 Hallcrest Drive, N.E., Atlanta, Ga.

Continuation-in-part of Ser. No. 153,885, June 16, 1971, abandoned, which is a continuation of Ser. No. 795,574, Jan. 31, 1969, abandoned, which is a continuation-in-part of Ser. No. 704,105, Feb. 8, 1968, abandoned. This application Nov. 6, 1972, Ser. No. 304,038

Int. Cl. A61m *1/00*

U.S. Cl. 128—232 **16 Claims**



This invention relates to a disposable syringe in which a nozzle portion is detachably attached to an end closure member having a tubular portion and a cap portion. A flexible bag is mounted on the tubular portion. In a disassembled array the syringe device may be packaged in a cardboard carton, plastic bag or the like for shipping and/or dispensing, as by means of a vending machine. The components are arranged in a small package. After assembly and use, the complete unit or merely the bag may be disposed of, as desired. As conceived and constructed, the low cost of the disposable syringe is accomplished by having the components adapted for mass production of suitable plastic materials.

3,773,048

DEVICES FOR MOUNTING MEDICAL APPLIANCE

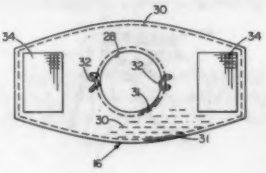
Alexander J. Kirkliauskas, 5 Telegraph St., South Boston, Mass.

Filed July 7, 1971, Ser. No. 160,376

Int. Cl. A61f *5/44*

U.S. Cl. 128—283 **6 Claims**

A device for retaining a medical appliance or the like at a predetermined position on the body, comprising an appliance engagement portion and a belt portion; the engagement portion comprising a panel of absorbent, non-allergic material having an opening for receiving a portion of the medical appliance and a vertically extended strip of small hook means horizontally aligned with the opening and having a vertical dimension substantially equal to the vertical dimension of the opening. The belt portion comprises a flexible, non-allergic



material extensible in a direction around the body and has a vertically extended strip of nap having a similar vertical dimension and adapted for fastening engagement with the hook means on the engagement portion. In preferred embodiments all strips, and the belt portion itself, have a vertical dimension approximately equal to that of the opening.

3,773,049

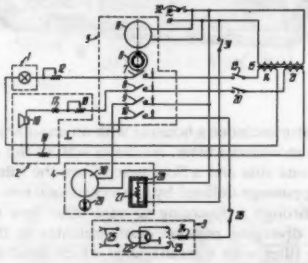
APPARATUS FOR THE TREATMENT OF NEUROPSYCHIC AND SOMATIC DISEASES WITH HEAT, LIGHT, SOUND AND VHF ELECTROMAGNETIC RADIATION

Lev Yakovlevich Rabichev, ulitsa 25 Oktyabrya, 80, kv. 7; Vladislav Fedorovich Vasiliev, ulitsa 25 Oktyabrya, 46, kv. 3; Alexandr Sergeevich Putilin, 1 pereulok Panfilova, 9-B, kv. 25; Tatyana Grigorievna Ilina, ulitsa Iskry, 25, kv. 1; Petr Vasilievich Raku, ulitsa Roz, 13, korpusl, kv. 73, and Leopold Pavlovich Kernitsky, ulitsa Zelinskogo, 12, korpus4, kv. 55, all of Kishinev, U.S.S.R.

Filed Nov. 13, 1970, Ser. No. 89,374

Int. Cl. A61n *1/40*

U.S. Cl. 128—362 **8 Claims**



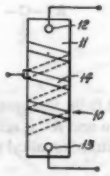
An apparatus for the treatment of neuropsychic and somatic disorders wherein light-, sound-, VHF electromagnetic field-pulses and radiation from light-, sound-, VHF electromcagnetic field- and heat-sources, respectively, are simultaneously applied by means of a control unit to the patient's central nervous system with a predermined repetition rate. The light radiation and sound radiation sources are made so as to exert an adequate and monotonous influence of the light-and sound-radiation on the patient's visual analyzers and auditory analyzers, respectively.

3,773,050

DEFIBRILLATOR WITH FLASH TUBE SWITCH

Joseph J. Panico, Arlington, Mass., assignor to Health Systems, Inc., Wabwin, Mass.

Division of Ser. No. 30,385, April 21, 1970, Pat. No. 3,723,887. This application Dec. 16, 1971, Ser. No. 208,870
Int. Cl. A61n 1/36
U.S. Cl. 128—419 D 6 Claims



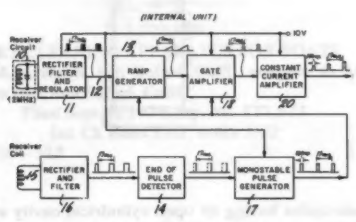
A defibrillator in which the patient contacting electrodes are coupled to a voltage source by a high speed, high energy switch system including a flash tube whose main electrodes are coupled in circuit with the patient contacting electrodes and whose control electrode is connected to a control switch.

3,773,051

METHOD AND APPARATUS FOR STIMULATION OF BODY TISSUE

Wade G. Holcomb, New Haven, James F. Hogan, Orange, and William W. L. Glenn, West Haven, all of Conn, assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 873,851, Nov. 4, 1969, abandoned. This application Mar. 1, 1972, Ser. No. 230,693
Int. Cl. A61n 1/38
U.S. Cl. 128—422 25 Claims



A system and method for the controlled stimulation of body tissue. The system includes a transmitter, arranged externally to the body, and a receiver implanted within the body and electrically coupled to the tissue to be stimulated. The transmitter is operative to generate a series of radio-frequency energy pulses, each of a prescribed duration. The receiver functions to detect these energy pulses and, in response to the receipt of each energy pulse, to apply at least one electrical pulse of prescribed amplitude and fixed duration to the body tissue. The duration of the radio-frequency energy pulses determines the amplitude of the electrical pulses applied to the tissue. These electrical pulses are preferably produced as pulses of constant current so that the current flow in the body tissue will be independent of the tissue resistance. In addition, these electrical pulses are preferably produced with alternating polarity so as to minimize the possibility of tissue damage.

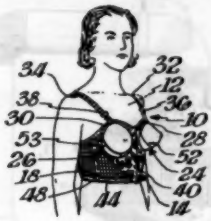
3,773,052

BRASSIERE

Marie Belardinelli, Wilmington, Del.

Filed July 6, 1971, Ser. No. 159,797
Int. Cl. A41c 3/06, 3/10
U.S. Cl. 128—465 4 Claims

A brassiere having breast supporting members which can be folded back to provide a shallower cup of greater support in combination with fabric panels which encircle the wearer's body, the panels containing a pocket for stiffening elements on each side arranged to lie substantially vertically along the wearer's rib cage with the upper terminal end of the pockets



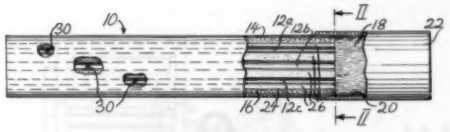
positioned near the outermost edge of the breast supporting members provides improved breast support imparting desired upward tilt and roundness to the wearer's breasts in a comfortable and attractive manner.

3,773,053

CIGARETTE WITH CONTROLLED SMOKING PROFILE

William K. Stephens, Jr., Mechanicsville, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,084
Int. Cl. A24d 01/02
U.S. Cl. 131—9 21 Claims



The smoking profile or delivery of particulate matter as a component of smoke in respect of each puff during the smoking of a cigarette is controlled by providing the paper wrapping enclosing the tobacco cylinder with one or more ventilation passages at either the inner or outer surface of the wrapper. The ventilation passages are provided by a strip of combustible material which is secured to the wrapping and has formed therein a number of grooves or channels, the grooves defining with the wrapping the respective ventilation passages. Blocking means are provided in the respective ventilation passages and prevent dilution air from entering the mouth end of the cigarette until a predetermined length of the cigarette has been smoked. The opening of the respective ventilation passages occurs at different times in correspondence to the increasingly higher levels of particulate matter produced as smoking proceeds, the increasing level of ventilation thereby provided controlling the smoking profile to flatten out the curve of particulate matter delivered with each puff.

3,773,054

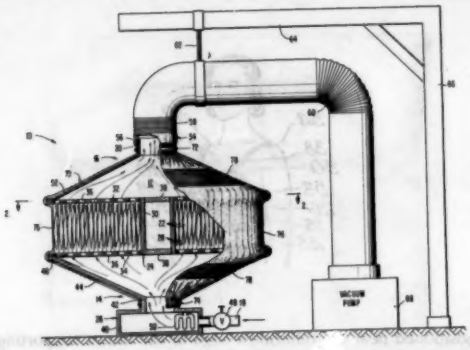
TOBACCO CURING

Emmett T. Clark, 513 N. Guthrie Ave., Durham, N.C.

Filed Apr. 7, 1971, Ser. No. 131,895
Int. Cl. A24b 01/02
U.S. Cl. 131—133 A 3 Claims

Tobacco curing system in which a spirally-wound reel containing tobacco leaves is placed in a chamber having flexible walls. The chamber is then evacuated to cause the ambient at-

mosphere to urge the flexible walls inwardly and exert pressure on the tobacco and effect a seal therewith. Preheated air



is passed through the tobacco while subatmospheric pressure is maintained in the chamber, to cure the tobacco.

3,773,055

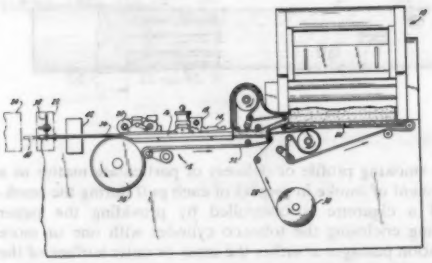
MICROWAVE TREATMENT OF CIGARETTES ON A MAKING MACHINE

George E. Stungis, St. Matthews, and Steve L. Merker, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Apr. 17, 1972, Ser. No. 244,785

Int. Cl. A24b *03/18, 05/28*

U.S. Cl. 131—140 P **6 Claims**



A cigarette rod or finished cigarette is filled with less tobacco than necessary to completely fill the wrapper and, in addition, the moisture content of the tobacco is adjusted to an appropriate level above normal making mcistures. The cigarette rod is then irradiated with microwave energy which causes the tobacco to expand and dry, producing a cigarette of proper firmness and tobacco moisture level.

3,773,056

COMPOSITIONS AND METHODS OF IMPROVING THE QUALITY OF HUMAN HAIR WITH STABLE METHYLOL COMPOUNDS

Gregoire Kalopissis, Paris; Jean Louis Abegg, Le Perreus; Henry DeBeaulie, and Giuliana Ghilardi, both of Paris, all of France, assignors to Societe Anonyme Dite: L'Oreal

Continuation of Ser. No. 631,156, April 17, 1967, abandoned. This application Mar. 5, 1971, Ser. No. 121,515

Int. Cl. A45d *7/04, 7/06*

U.S. Cl. 132—7 **23 Claims**

Methylol compounds which do not liberate free formol and are therefore suitable for cosmetic use, compositions including said compounds, and methods of using said compositions to improve the cosmetic properties of human hair. Exemplary methylol compounds are the methylolureas, and they may be prevented from liberating harmful amounts of free formol by icluding therein an electrophile group selected from among those responding to the formula:

in which X is selected from the group consisting of an oxygen atom and a sulfur atom and R'' is selected from the group consisting of a hydrogen atom, an alkyl radical and an NH_2 group.

3,773,057

HAIR CURLER WITH PLASTIC INTEGRAL RING

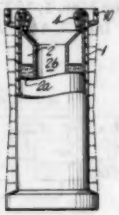
Bent Georg Johansen, Kalundborg, Denmark, assignor to Bristol-Myers Company, New York, N.Y.

Filed Oct. 12, 1971, Ser. No. 188,372

Claims priority, application Denmark, Oct. 16, 1970, 5281/70

Int. Cl. A45d *2/12*

U.S. Cl. 132—33 R **1 Claim**



A hair-curler having an open cylindrical cavity at one end and having an outer plastic casing formed around an inner metal heat-accumulating body. The open cavity allows the curler to be mounted onto a pin-formed heating element. The outer plastic casing is bent inwardly over and firmly grasping the end edge of the heat-accumulating body in order to effect a tight bond between the two surfaces and in order to insulate the metal surface of the inner heat-accumulating body. Apparatus for forming the outer casing over the inner heat-accumulating body.

3,773,058

TRAY WASHING SYSTEM

Lawrence Pete Kitterman, 1309 Woodway, Hurst, and Howard Gene Rice, 1109 Hadrian Ct., Irving, both of Tex.

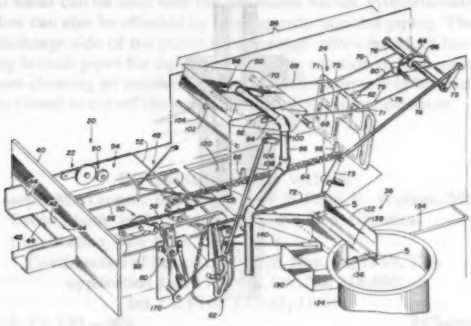
Division of Ser. No. 89,401, Nov. 13, 1970. This application Jan. 20, 1972, Ser. No. 219,583

Int. Cl. B08b *3/02, 3/10, 15/00*

U.S. Cl. 134—62 **28 Claims**

A tray washing system includes conveyors which transport compartmented food service trays from a tray receiving mechanism to inverting and scrapping mechanisms and through washing, rinsing and drying mechanisms to a stacking mechanism. The receiving mechanism restricts trays to insertion in a predetermined orientation in which the food receiving surfaces face upwardly, and the inverting mechanism inverts each tray so that the food receiving surface faces

downwardly. As each tray is inverted, the scrapping mechanism discharges substantially the entire contents of a cleaning fluid reservoir onto the food receiving surface of the tray, and thereby dislodges refuse and silverware that may be on the tray. The washing, rinsing and drying mechanism apply a water-detergent solution, rinse water, and drying air to the trays, respectively, and the stacking mechanism deposits the



trays onto a mobile self-depressing tray receiver. The tray washing system further includes a silverware separating and soaking mechanism comprising a chute which receives cleaning fluid and refuse and silverware entrained therein, a dam which removes the heavier silverware from the cleaning fluid, and a door in the bottom of the chute for dropping the silverware into a soaking sink.

3,773,059

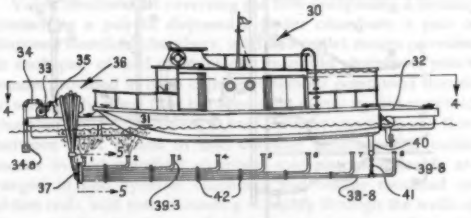
JET CLEANING APPARATUS FOR BOATS

Howard M. Arneson, San Rafael, Calif., assignor to Arneson Products Inc., San Rafael, Calif.

Filed Sept. 3, 1971, Ser. No. 177,673

Int. Cl. B60s *3/02*; **B08b** *3/02*

U.S. Cl. 134—123 **1 Claim**



Boat cleaning apparatus wherein submerged jets of water are caused to impinge upon submerged hull of boat. The jets are moved (e.g., rotated) or are turned on in sequence to contact the entire underwater structure.

3,773,060

DISHWASHER

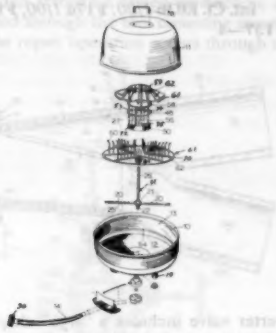
Richard W. Byrd, Erie, Pa., assignor to Zwin Industries, Inc., Erie, Pa.

Filed Dec. 15, 1971, Ser. No. 208,242

Int. Cl. B08b *3/02*

U.S. Cl. 134—179 **3 Claims**

A dishwasher made up of a drum and a lid, a rotating water dispensing member in said drum, and a dish rack. The rack is made up of a silverware holder supported on a rack and vertical columns extending upward from the silverware holder supporting a cup rack. The columns extend through gudgeons on



rings and are limited in their downward movement by bosses on the columns.

3,773,061

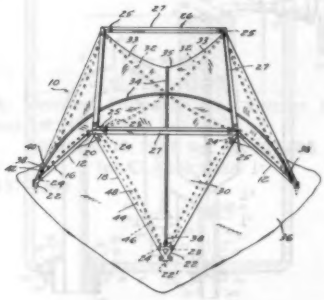
MODIFIED PRESTRESSED MEMBRANE STRUCTURE

Horst Berger, 18 Chestnut Dr., Hastings on Hudson, N.Y.

Filed May 19, 1972, Ser. No. 255,076

Int. Cl. E04b *1/347*

U.S. Cl. 135—1 R **17 Claims**

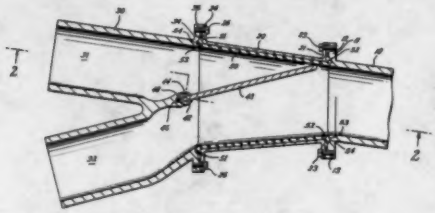


A shelter structure has a plurality of rigid inverted V-shaped frame members positioned in a predetermined array forming a closed polygon when viewed in plan. A relatively rigid compression member operatively interconnects the apices of each of the inverted V-shaped frame members and a flexible membrane is supported within the frame members, conforming in plan to the closed polygon defined thereby. A first set of prestressed tension cables, operatively connected to the apices of the inverted V-shaped frame members, support the flexible membrane. A second set of prestressed tension cables are secured to the inverted V-shaped frame members and operatively associated with the membrane in predetermined positions between the first set of cables in order to maintain the membrane in tension under substantially all load conditions. As a result, the first and second sets of prestressed cables will cooperate with each other and with the flexible membrane to form a relatively rigid and stable structure.

3,773,062
FLOW DIVERTER VALVE

Donald J. McIver, Houston, Tex., assignor to Keystone International Inc., Houston, Tex.

Filed Mar. 24, 1971, Ser. No. 127,504
Int. Cl. E03b *1/00*; F17d *1/00*; F16k *1/14*
U.S. Cl. 137—1 9 Claims

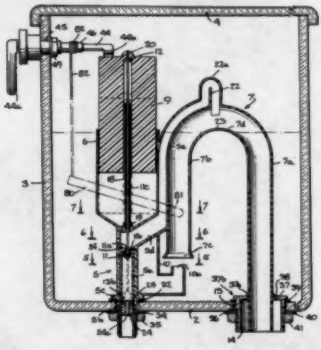


A diverter valve includes a "wye" shaped conduit and a paddle pivotally mounted at the confluence of the branches of the conduit and adapted to seal across either branch to direct flow from the trunk of the conduit to one branch or the other. A replaceable sealing means is provided on the inner periphery of the conduit. The sealing means comprises a conical tube made of an elastomeric material.

3,773,063
FLUSHING DEVICE

Vernon D. Roosa, 184 Wood Pond Rd., West Hartford, Conn.

Division of Ser. No. 053,170, July 8, 1970, Pat. No. 3,644,940.
This application Nov. 19, 1971, Ser. No. 200,342
Int. Cl. F16k *45/00*
U.S. Cl. 137—217 7 Claims

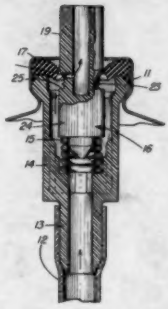


A flushing device for toilets having a float directly connected to the movable part of an inlet valve to form a unitary moving element. A siphon empties the flush tank and becomes inactive until a full tank is flushed again. When the float, which is slidably mounted in a chamber, is forced down for flushing, it forces water from the float chamber into the siphon either alone or with water from the inlet valve, to start a siphoning action to empty the flush tank. At the same time the float opens the inlet valve to supply additional water to start the siphon and to keep the valve open until the flush tank is refilled at which time the float has been raised to its normal position. Provisions are made for preventing a reverse flow from the tank into the inlet pipe during failure of the water supply and for filling the toilet bowl to the desired level at the end of the flushing operation. Provision is also made for conserving water by flushing a predetermined quantity of water for solids and considerably less water for liquids and by providing means for regulating the amount of water to be flushed by the flushing unit.

3,773,064
VALVE STEM SEALING RING

John Richard Focht, Yonkers, N.Y., assignor to Precision Valve Corporation, Yonkers, N.Y.

Filed May 7, 1971, Ser. No. 141,268
Int. Cl. F16k *1/30*
U.S. Cl. 137—244 4 Claims

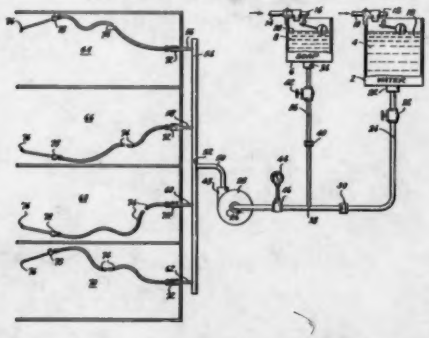


A sealing system for pressurized container valves particularly designed for the dispensing of solid products in powdered form including means for preventing the disabling buildup of the product residue on the sealing surfaces.

3,773,065
SOAP PROPORTIONING MEANS FOR A VARIABLE CAPACITY WASH PUMP

George W. Mattox, El Monte, Calif., assignor to Clayton Manufacturing Company, El Monte, Calif.

Filed Jan. 17, 1969, Ser. No. 792,107
Int. Cl. B05b *7/04*
U.S. Cl. 137—263 16 Claims



Proportioning apparatus comprising a water tank and a soap tank connected by piping with the inlet of a high pressure, variable capacity pump. The ratio of soap to water is maintained constant for any given washing requirement by flow restriction in the piping leading from each of the tanks to the pump. A constant ratio of soap to water is assured by float-operated valves on the tanks to maintain an equal level or hydrostatic head, or a differential in head, depending upon the relative specific gravities of the liquid soap and water. If the specific gravities are equal, or the head of the liquids is adjusted to compensate for the difference in specific gravity, there will be no interchange of the water and soap from one tank to the other. This arrangement also eliminates the need for check valves in the system. Equal or unequal levels may be maintained in the tanks, regardless of the difference in specific gravities, and interchange prevented by check valves.

Flow from the two tanks is induced by suction created by the pump. The degree of suction and volume of water withdrawn from the water tank is controlled by prescribed flow restriction, for example, by a fixed orifice or a variable throttle valve upstream of the pump. The proportionate volume of liquid soap withdrawn from the soap tank is also controlled by prescribed flow restriction, for example, a fixed orifice or an adjustable throttle valve, located upstream of the pump. Fixed orifices sized to provide the desired ratio of soap to water can be used with the adjustable valves. Proportionate flow can also be effected by using appropriate size piping. The discharge side of the pump is connected with a manifold having branch pipes for delivering cleaning solution to high pressure cleaning jet nozzles. The valve in the soap supply line can be closed to cut off the soap flow during a rinsing operation.

3,773,066

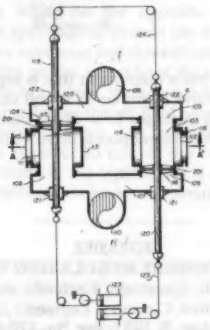
REVERSING FLOW VALVE

Joseph M. Tyrner, Brookside, and William E. Watson, Mt. Tabor, both of N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 877,720, Nov. 18, 1969. This application Jan. 17, 1972, Ser. No. 218,605

Int. Cl. F16k *31/163, 11/07*

U.S. Cl. 137—309 **7 Claims**



Valve structure for reversing gas flow comprising a housing containing a pair of disposed cylinder chambers, a pair of disposed manifold chambers, inlet and outlet means provided in each pair of said cylinder and manifold chambers, piston means provided in each cylinder chamber positioned therein to selectively effect flow between inlet means in said manifold chamber and outlet means in said cylinder chamber and flow between inlet means in said cylinder chamber and outlet means in said manifold chamber, said pistons slideably arranged in said cylinder chambers and fixedly mounted on piston rods, said rods extending slideably through the walls of the manifold chamber, and driving means connected to said piston rods for inducing said rods to reciprocate thereby effecting sliding motion of the pistons within said cylinder chambers and thereby reverse the flow between the inlet and outlet means in said cylinder chambers.

3,773,067

APPARATUS FOR EFFECTING OPERATIONS ON A FITTING ON A HIGH PRESSURE GAS MAIN

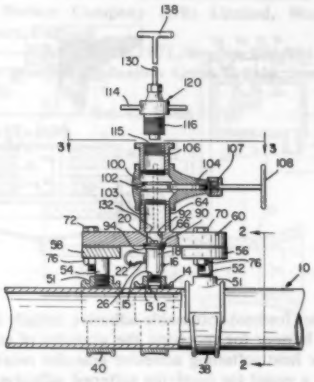
Charles William Ray, Ft. Wayne, Ind. assignor to Emmett O. Bandy, Indianapolis, Ind.

Division of Ser. No. 807,846, March 17, 1969, Pat. No. 3,626,576. This application Aug. 23, 1971, Ser. No. 174,121

Int. Cl. B23b *41/08;* **F16e** *41/04*

U.S. Cl. 137—318 **11 Claims**

In repairing gas mains, a fixture is clamped to the main at the location of the repair, and a conduit is then joined to the main through a sealed fit. The conduit has a valve which separates the conduit into two compartments, and the end of the conduit is adapted to receive a tool mounting, the valve being opened and a tool passed through the conduit to perform repair operations on the main. The tool mounting is connected to the conduit through a sealed connection, and the tool can be operated through the tool mounting means by an operator so that the repair operation occurs through a sealed



conduit. The entire operation occurs with normal operation of the main under its usual operating condition of internal superatmospheric pressure.

This superatmospheric pressure can be varied and the present invention contemplates pressure for gas mains in the range of 60 psi – 120 psi, other pressures for other materials such as petroleum, water, etc., varying as desired.

3,773,068

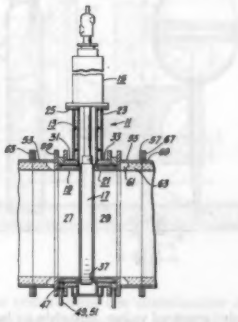
GATE VALVE

Joseph A. Vietorisz, Pittsburgh, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Sept. 10, 1971, Ser. No. 179,406

Int. Cl. F16k *49/00*

U.S. Cl. 137—340 **3 Claims**



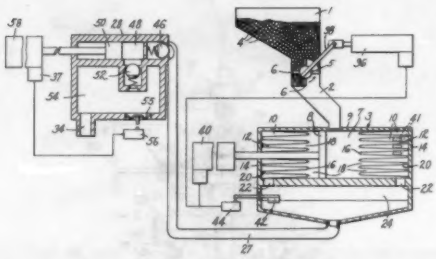
An improved gate valve has a seat that is separable from the valve body. The seat is rigidly clamped between the nozzle flange of the valve body and the mating flange of the downstream duct. Such improved gate valve seat is installed on the upstream side of the valve body also.

3,773,069

APPARATUS FOR DISPENSING HEAT SOFTENABLE ADHESIVE INITIALLY IN GRANULE FORM

Hans Waldemar Rebentisch, Frankfurt am Main-Bonames, Germany, assignor to USM Corporation, Boston, Mass.

Filed Jan. 31, 1972, Ser. No. 222,099
Claims priority, application Germany, Feb. 3, 1971, P 21 05 037.3
Int. Cl. F16k 49/00
U.S. Cl. 137—341 9 Claims



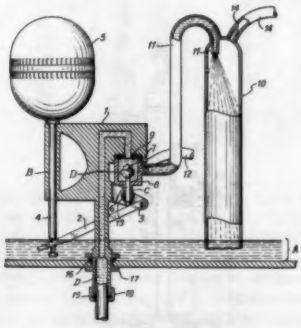
A dispenser for heat softenable adhesive initially in granule form has a hopper for receiving the granules of adhesive, a chamber for heat softening adhesive granules received from the hopper, a vessel for receiving softened adhesive from the chamber and a pump for supplying adhesive from the vessel as desired. The hopper has means for dispensing predetermined quantities of adhesive granules into the chamber. The chamber for heat softening the adhesive has progressively narrowing passages between heated members for heating the adhesive and, preferably, a piston for pressing adhesive along the passages. A control responsive to the level of adhesive in the vessel activates the hopper dispensing means and the chamber for heating the adhesive.

3,773,070

WATER-INLET CONTROL VALVE

Eligio Franco Cabero, No. 182 Local E 7, Puebla, Mexico

Filed Nov. 3, 1971, Ser. No. 195,146
Claims priority, application Mexico, Apr. 1, 1971, 126301
Int. Cl. F16k 31/26
U.S. Cl. 137—430 4 Claims



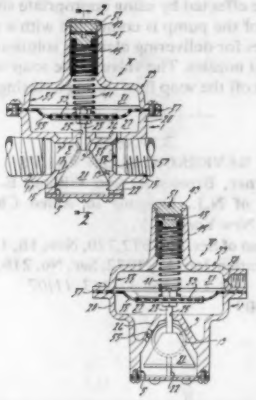
A water-inlet control valve, suitable to be used with a toilet water tank is disclosed. Said valve effects the control on the water-inlet by means of a sphere which bears against a circular gasket upon being pulled-up by a lever fastened to a pivot and actuated by means of a sliding shaft connected to a floating member, so as to restrain the passage of a water flow through the valve when the water level at said tank is at a predetermined height.

3,773,071

GAS REGULATOR

Charles Stang, Jr., Detroit, Mich., assignor to Maxitral Company, Southfield, Mich.

Filed Mar. 13, 1972, Ser. No. 234,274
Int. Cl. F16k 17/34
U.S. Cl. 137—484.8 6 Claims



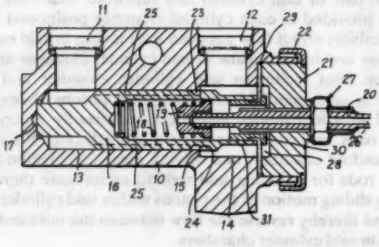
A gas regulator has a diaphragm that is separated from the flow passage and valve chamber by a wall that has a plurality of pressure sensing passages in it which connect one side of the diaphragm with different points in the outlet passage.

3,773,072

FLUID PRESSURE REGULATING VALVES

Brian Hugh Croft, Coventry, England, assignor to Brico Engineering Limited, Coventry, England

Filed Aug. 9, 1971, Ser. No. 170,039
Int. Cl. F16k 31/36
U.S. Cl. 137—494 2 Claims



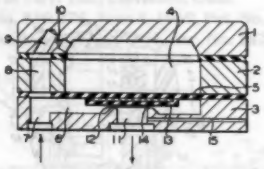
This invention relates to a fluid pressure regulating valve particularly for regulating the pressure of liquid fuel fed to the injector in a fuel injection system of an internal combustion engine. In the valve fluid passes from an inlet passage to an outlet passage through an aperture and the size of the aperture is controlled by a member having an area on which the inlet fluid pressure acts in opposition to a bias means, whereby to regulate the pressure, and the member is arranged to be subject to negligible net force, in a direction which would alter the aperture size, due to variations in pressure of the outlet fluid.

3,773,073

PNEUMATIC LOGIC VALVE

Donald Brown, Monroeville, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed June 24, 1971, Ser. No. 156,399
Int. Cl. F16k 7/17
U.S. Cl. 137—496 7 Claims



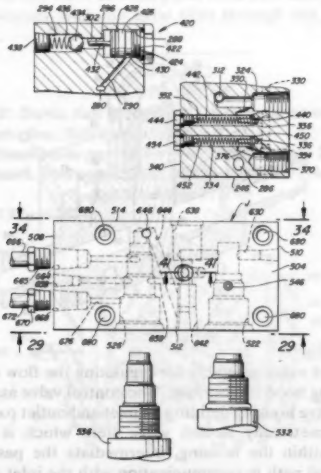
A fluid pressure logic valve device for producing an output signal of limited duration, regardless of the duration of the input signal, by utilizing the drop in pressure characteristic of fluid pressure flowing through a constricted opening, such constriction, through which supply pressure for the output signal flows, being formed by the proximity of an adjacent side of a valve member to a cooperating valve seat, the valve member being subjected on the opposite side, at a controlled rate, to the same fluid pressure supplied for the output signal. As the pressure acting on the opposite side of the valve member tends to approach or exceed the differential pressure value between the upstream and downstream areas of the constriction and acting on the one side of the valve member, said valve member tends to close, thereby further constricting the flow path, further reducing the set fluid pressure acting on said one side of the valve member, and thus causing positive seating of said valve member to cut off the output signal. Continuance and duration of the input signal is of no consequence once the valve member is in its cut-off position.

3,773,074

HYDRAULIC CONTROL UNIT

Marc L. Miceli, Lyndhurst, Ohio, assignor to Meyer Products Inc., Cleveland, Ohio

Filed Nov. 1, 1972, Ser. No. 302,727
Int. Cl. F16k 11/20
U.S. Cl. 137—596 42 Claims



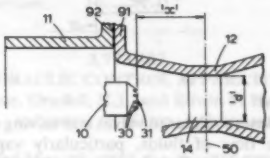
A hydraulic control unit for controlling the position of a plow blade or the like includes a one-piece casting defining a common base portion for a selectively variable multifunction power unit. The common base portion is bored to provide passages for flow of hydraulic fluid from a pump. Several different one-piece control blocks are attachable to the common base portion for selectively varying the number of functions which the power unit controls.

3,773,075

FUEL BURNER ASSEMBLIES

Michael Robert Thompson; Reginald James Pearce, and David Ernest Howard, all of West Drayton, England, assignors to Airoil Burner Company (GB) Limited, West Drayton, Middlesex, England

Filed Nov. 24, 1971, Ser. No. 201,874
Claims priority, application Great Britain, Nov. 30, 1970, 56,788/70
Int. Cl. F16k 19/00
U.S. Cl. 137—604 2 Claims



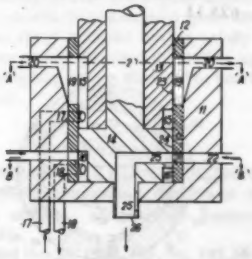
A fuel burner assembly of the venturi type having its fuel nozzle provided with a plurality of jets and being more forwardly disposed in relation to the venturi than is conventional in order to reduce operating noise.

3,773,076

SELECTOR VALVE FOR RECEIVING & DISTRIBUTING PLURAL FLOWS

Frederick Arthur Smith, Yorkshire, Harrogate, England, assignor to Imperial Chemical Industries, Limited, London, England

Filed Feb. 2, 1972, Ser. No. 222,829
Int. Cl. F16k 11/02, 11/12
U.S. Cl. 137—625.19 14 Claims



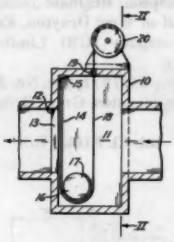
A rotary valve for controlling the distribution of fluid flow to and from a number of vessels, such as filters, is adapted in one position to receive a single primary flow from a source, direct a separate fluid stream to each of several vessels, receive back a secondary fluid stream from each vessel and to dishcarge the combined secondary streams. Other positions of the valve effect blockage of the flow to any one of the vessels to isolate the same, passage to waste of the flow from the isolated vessel and restricted flow to the isolated vessel.

3,773,077

FLUID FLOW CONTROL VALVES

Herbert L. Barnebey, Columbus, Ohio, assignor to Barnebey-Cheney Co., Columbus, Ohio

Filed Jan. 17, 1972, Ser. No. 218,114
Int. Cl. F16k 13/00
U.S. Cl. 137—625.28 3 Claims



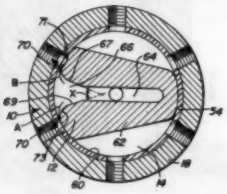
This disclosure relates to valves and valving systems for controlling the flow of fluids, particularly vapors and gases, through ports of relatively large area with relatively low pressure drops. The type of valve disclosed I call a "curtain valve;" it is comprised of an impervious flexible sheet (the curtain) movably installed to cover and uncover an opening or port on the upstream side so that the curtain seals around the edges of the port under the pressure differential across the port. To prevent deflection of the central part of the flexible sheet through the port opening a grid coextensive in area with the port opening may be provided on the downstream side, the bars of the grid being sufficient in number and spacing to support the flexible sheet or curtain which covers (or throttles) the port area. This disclosure includes such valving in a system of an array of several ports, the particular example selected to illustrate the invention being valving for controlling the flow of fluids in a typical adsorption system with three adsorbers.

3,773,078

ROTARY FLOW DISTRIBUTOR

George Suntheimer, Hanover, Mass., assignor to Robert B. Patterson; Mary D. Patterson; William A. Patterson, all of Braintree, Mass.

Filed May 3, 1972, Ser. No. 249,920
Int. Cl. F16k 5/04, 11/00
U.S. Cl. 137—625.11 8 Claims



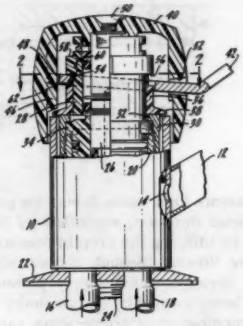
A rotary flow diverter has an input port communicating with a motor driven rotor for directing fluid flow in sequence to a plurality of output ports. The rotor is configured so that there is an overlap in the delivery of the fluid to successive output ports, i.e., fluid is directed to two adjacent output ports as the rotor is positioned between these ports to thereby provide continuous flow through the rotor and uninterrupted flow between adjacent output ports.

3,773,079

FAUCET HANDLE CONSTRUCTION

Alfred M. Moen, 25 Lakeview Dr., Grafton, Ohio

Continuation-in-part of Ser. No. 147,327, May 27, 1971, Pat. No. 3,726,316. This application May 17, 1972, Ser. No. 253,989
Int. Cl. F16k 11/02, 31/60
U.S. Cl. 137—625.17 21 Claims



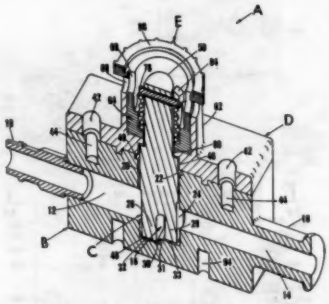
A combination cap and lever for a single handle mixing faucet having a stem and a body member positioned about the stem. There are inlet and outlet means in the stem with the body member having a pair of water inlet openings and at least one water discharge opening. Rotation and reciprocation of the stem relative to the body member controls the volume and temperature of water flowing from the faucet. The cap with the lever is attached to the stem and a portion of the lever is engaged in a groove of the body member. There is an interlock between the lever and the cap for simultaneous rotation and reciprocation of the cap and lever.

3,773,080

AIR FLOW CONTROL VALVE

Herbert A. Raschke, Greenbrae, Calif., assignor to E. D. Bullard Company, Sausalito, Calif.

Filed May 19, 1971, Ser. No. 146,576
Int. Cl. F16k 5/02, 5/12
U.S. Cl. 137—625.32 5 Claims



A control valve assembly for regulating the flow of air to a sandblasting hood is described. The control valve assembly includes a valve housing defining an inlet and outlet passageway, and a diametrically slotted valve stem which is rotatably received within the housing, intermediate the passageways. An air bleed path in communication with the inlet and outlet passageways provides for the maintenance of a minimum flow of air through the assembly. Air flow regulation is afforded by rotation of the valve stem, 90° rotation required to open the

valve from the closed position. A rotatable control knob, spring-biasedly mounted to the housing concentric to the stem, is provided which when axially displaced from the housing engages the valve stem for rotation.

3,773,081

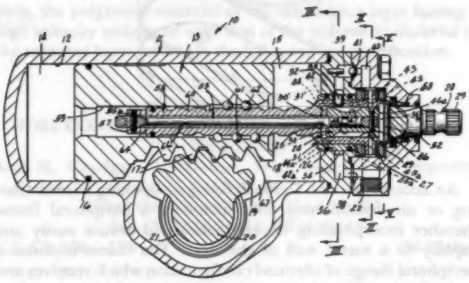
POWER STEERING GEAR ASSEMBLY

Fredrick D. Venable, and Raymon L. Goffe, both of Lafayette, Ind., assignors to TRW Inc., Cleveland, Ohio.

Division of Ser. No. 830,275, June 4, 1969, Pat. No. 3,606,819. This application Sept. 20, 1971, Ser. No. 182,114

Int. Cl. F16k *11/06*

U.S. Cl. 137—625.43 **2 Claims**



A power steering gear assembly including a centrally bored rack toothed piston dividing a power cylinder in a pair of fluid pressurized chambers, a sector gear meshing with the piston, a valve assembly communicating the pressure chambers with a source of pressurized fluid and including a pair of rotatable valve members nested together in telescopic relation, a centrally bored worm connected to the outer valve member for joint rotation therewith and extending into the bore of and connected to the piston to cause rotation of the worm in response to axial movement of the piston, an operating shaft formed integrally with or connected to the inner valve member for joint rotation therewith and a torsion rod providing follow-up movements between the valve members, the torsion rod extending into the bore of the worm, which worm bore in turn communicates certain axial slots formed in the outer valve member with the pressure chamber spaced farthest therefrom, other axial slots formed in the outer valve member opening directly to the pressure chamber immediately adjacent the valve assembly and fluid inlet and outlet ports communicating with the axial slots through the inner valve member.

3,773,082

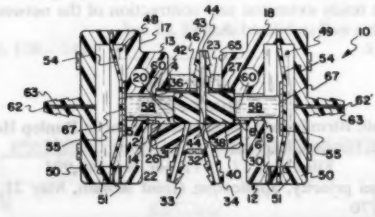
FLUID VALVE

William P. Davis, Salt Lake City, Utah, assignor to Bio-Logics Products, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 794,099, Jan. 27, 1969, abandoned. This application Jan. 5, 1971, Ser. No. 104,103

Int. Cl. F16k *31/145*

U.S. Cl. 137—625.48 **5 Claims**



A fluid valve comprising a valve body, a stationary valve plate mounted to the valve body and having a flat sealing surface juxtaposed a recess in the body, the valve plate defining two outlet ports, a spring biased relatively movable valve slider member slidably engaging the valve plate within the valve body recess in surface-to-surface relation and having a fluid influent port therein to which fluid is continuously supplied and from which fluid is selectively communicable with either of the outlet ports, a sealed relation being maintained between the slider member and the valve plate as the slider member moves across the sealing surface between the outlet ports so that no fluid is isolated within the valve during fluid flow therethrough and the valve does not displace fluid into or out of the valve after the influent port clears one outlet port and before it achieves fluid communication with the other outlet port. Opposed diaphragm assemblies are mounted at opposite sides of the valve and respectively subjected to control fluid pressure at different points in time to shift the slider member from one operative position to the other as a result of displacement of an umbrella plate carried by each diaphragm and a pin interposed between one umbrella plate and one side of the slider member.

3,773,083

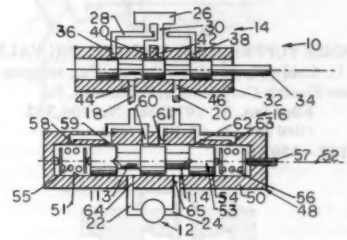
HYDRAULIC CONTROL APPARATUS

Robert Z. Hague, Oradell, N.J., and Edwin F. Hantman, New York, N.Y., assignors to Kemp Industries, Inc., West Milford, N.J.

Filed Mar. 28, 1972, Ser. No. 238,879

Int. Cl. F16k *11/07*

U.S. Cl. 137—625.69 **6 Claims**



A hydraulic control apparatus for a hydraulic motor including, an isolator valve, first and second motor lines for connecting said isolator valve to a pressure source, third and fourth motor lines for connecting said isolator valve to said motor, said isolator valve comprising, a valve casing having an elongate chamber having an axis, and a spool assembly received in said chamber coaxially therewith, said spool assembly including, an elongate spool member having axially opposite end faces, first spring means disposed in bearing against one end face, and second spring means disposed in bearing against the opposite end face.

3,773,084

CONTROL FOR MOBILE CONSTRUCTION MACHINE

Gerald W. Bernhoft, Wauwatosa, and David A. Miller, New Berlin, both of Wis., assignors to Koehring Company, Milwaukee, Wis.

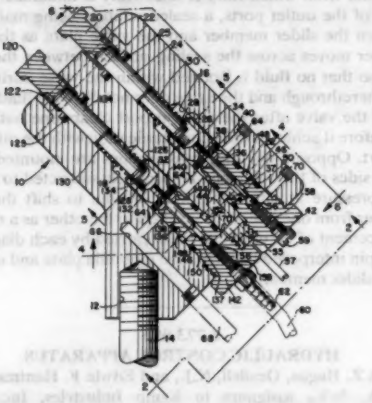
Filed Nov. 4, 1971, Ser. No. 195,581

Int. Cl. F16k *11/16*

U.S. Cl. 137—627.5 **9 Claims**

A control for a mobile excavating backhoe comprising a handball including a trigger lever mounted for pivotal movement, a plunger operatively associated therewith, internal passages for permitting pressurized air to flow between inlet, exhaust and signal ports, and a metering or modulating valve regulating the air flow between the inlet, exhaust and signal ports. Pivotal movement of the lever is translated into axial movement of the plunger and the metering valve to produce a variable pressure signal at one of the signal ports in the hand-

ball. The signal controls an air cylinder in the pneumatic control system, and the cylinder is connected to a hydraulic control valve which provides the necessary oil pressure for operating a double acting hydraulic cylinder secured to the frame of



an earth-moving machine. The magnitude of the variable pressure signal determines the extent of movement of the hydraulic control valve, thus providing proportional control over the functions of the earth-moving machine.

3,773,085

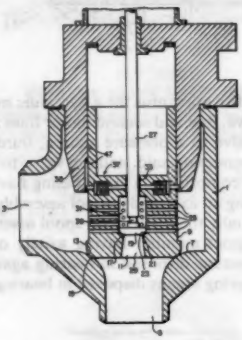
NOISE SUPPRESSING THROTTLING VALVE

William C. Caldwell, Jr., Brookhaven, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 14, 1971, Ser. No. 106,332

Int. Cl. F16k *1/54*

U.S. Cl. 137—630.15 8 Claims



A noise suppressing steam throttle valve comprises a pair of concentric seats and plugs, the inner seat and plug being disposed within the outer plug, and a plurality of ducts disposed in the outer plug for the steam to flow from upstream of the outer plug to upstream of the inner seat. Upon opening the valve, the inner plug moves upwardly allowing steam to flow through an increasing number of ducts as it opens, and opens fully before the outer plug moves off the outer seat. The ducts break up the steam flowing therethrough into small discrete jets which reduce the noise caused by the high pressure drop across the inner seat at low lifts. When the outer plug lifts off its seat the quantity of steam flowing through the ducts decreases until it approaches zero flow as the outer plug approaches its fully open position, thus minimizing the pressure drop across the fully open valve by allowing unrestricted flow across the outer seat.

3,773,086

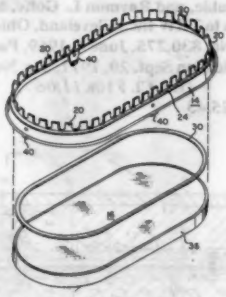
ACCESS DOOR AND FRAME

John C. Kurz, Philadelphia, Pa., assignor to Advanced Air, Inc., Philadelphia, Pa.

Filed Dec. 8, 1971, Ser. No. 205,959

Int. Cl. F16l *55/10*

U.S. Cl. 138—92 1 Claim



An access door and frame defining an opening in a ventilating or air conditioning duct including a peripheral frame member incorporating dovetail means to secure easily and rapidly to a metal wall of the duct. The frame includes a peripheral flange of obround configuration which receives and locks the door therein in pressure resisting, air tight junction. The door removably secures to the frame by means of a plurality of readily accessible locks. Both the frame and the door are fabricated to obround configuration to then permit maximum utilization of space with minimum dimensions.

3,773,087

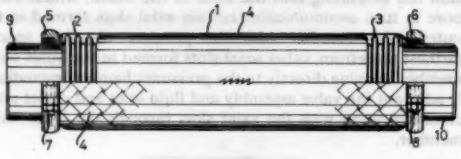
FLEXIBLE EXTENSIBLE AND CONTRACTABLE TUBE

Hiroshi Katayama, No. 41-10 Sanno 3-chome, Ohta-ku, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,287

Int. Cl. F16l *11/00*

U.S. Cl. 138—120 1 Claim



A flexible extensible and contractible tube is provided which comprises a main body of straight tube joined at its opposite ends with a pair of bellows tubes, the outer surface of the straight and bellows tubes being encased by a network formed of braided wire or strip material, the network being clamped at its ends to extensions of the bellows tubes with clamping members. The present invention is simple to form, exhibits reduced resistance to fluid flow through its interior, permits ready extension and contraction of the network, and maintains well stabilized shape.

3,773,088

HOSE PIPES

Eric Ball, Birmingham, England, assignor to Dunlop Holdings Limited, London, England

Filed May 17, 1971, Ser. No. 143,991

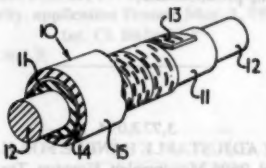
Claims priority, application Great Britain, May 21, 1970, 24,695/70

Int. Cl. F16l *11/04*

U.S. Cl. 138—129 10 Claims

A hose pipe having a reinforcing layer formed from a reinforcing strip of slit or otherwise perforated film of polymeric

material and an adjacent layer of polymeric material arranged to penetrate into the slits or perforations of the reinforcing



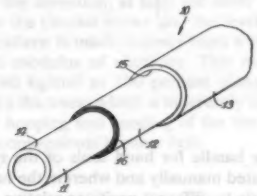
strip, the polymeric material of the reinforcing layer having a high tenacity compared with that of the polymeric material of the adjacent layer, of which the following is a specification.

3,773,089

HOSE CONSTRUCTION AND METHOD OF FORMING THE SAME

Anil H. Chudgar, Manitowoc, Wis., assignor to Imperial-Eastman Corporation, Chicago, Ill.

Filed Oct. 28, 1971, Ser. No. 193,492
Int. Cl. B32b *27/34*; D03d *49/46*
U.S. Cl. 138—132 26 Claims



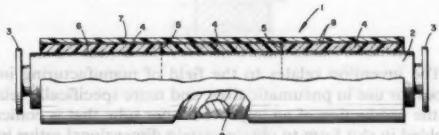
A method of forming a hose construction wherein a peptide surface portion is treated by a nonsolvent material which disrupts the intermoleculer hydrogen bonds between —NH— and —CO— groups to soften the surface portion and permit urging of a fibrous second hose element against the softened surface portion to embed the fibrous second portion therein whereupon removal of the treating material permitting reformation of the disrupted intermolecular hydrogen bonds cuases a locked association of the hose elements. The second surface portion is formed of a material substantially inert to the treating material. Also disclosed is a hose construction formed by this method.

3,773,090

BUOYANT HOSE AND METHOD FOR MAKING SAME

Piero Ghersa; Flavio Torghele, and Cesare Laberinti, all of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed July 6, 1971, Ser. No. 159,763
Claims priority, application Italy, Feb. 12, 1971, 20456 A/71
Int. Cl. F16l *9/14*
U.S. Cl. 138—141 5 Claims



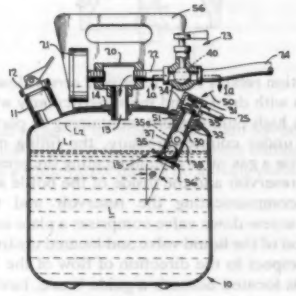
The invention relates to a buoyant flexible hose and method for making same wherein buoyancy is imparted to the hose by an annular sleeve which surrounds said hose and is constituted by an inner layer consisting of a series of axially successive preformed annular bodies of cellular high polymer which are surrounded by an outer layer of a wear resistant polymeric material with the interposition of an intermediate layer of a reinforcing fabric between said inner and outer layers. The outer layer is formed in situ and together with the intermediate layer constitutes a unitary body structure, which is continuous and uninterrupted in the entire extent along said axially successive annular bodies.

3,773,091

VACUUM POWER LIQUID REMOVAL APPARATUS

Kenneth D. Boyd, 619 S. Marlyn Ave., and Charles L. Wayland, 214 Nanticoke Rd., both of Baltimore, Md.

Filed May 13, 1971, Ser. No. 143,151
Int. Cl. B65b *31/02*
U.S. Cl. 141—42 10 Claims



A system is provided for transferring liquid between two chambers by use of differential pressure established by a vacuum in one chamber and including an integral dual purpose valve assembly to allow evacuation of one chamber but preventing liquid contamination of the vacuum source. The valve assembly mounted on the top of the container includes check valve means to regulate the gas flow and float valve means responsive to a predetermined level of liquid to prevent liquid transfer after said level is reached. The float member has a specific gravity less than the liquid but a weight sufficiently light to be supported by the vacuum in the connecting passage between the two valve means so as to prevent inadvertent reset of the float valve means upon changing of the liquid level. Reset is obtained by utilizing momentum of the float valve member in response to a sharp rap on the valve assembly; said assembly extending at an acute angle with respect to the vertical and including a resilient ball free to roll along the inside surface of a confining tubular housing. A shock absorbing mount for the valve assembly prevents inadvertent reset of the float valve due to outside jarring forces and the liquid is coated on the float valve ball to assist in forming a leak-proof seal as the ball rolls up the inside of the tubular housing. Atmospheric pressure is introduced and liquid cutoff to the container after filling to further prevent inadvertent reset and inadvertent fresh liquid transfer from said chamber. Centrally mounted T connection for the liquid transfer is protected by dual handles for portability and the pouring spout with stopper is provided for disposing of transferred liquid.

The present invention relates to liquid transfer apparatus, and more particularly, to improvements in such apparatus utilizing a vacuum source as the means of power.

3,773,092

SCREW-DOWN VALVES FOR FILLING BOTTLES WITH DRINKS

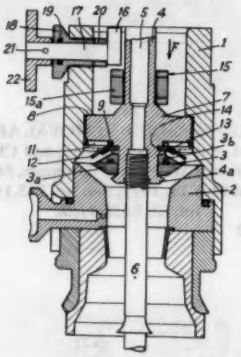
Hector Granier, Vergeze, France, assignor to A-T-O Inc., Willoughby, Ohio

Filed Sept. 13, 1971, Ser. No. 179,632

Claims priority, application France, Sept. 22, 1970, 7034349; Oct. 8, 1970, 7036441

Int. Cl. B65b *31/00*

U.S. Cl. 141—46 **15 Claims**



This invention relates to an improved screw-down valve for filling bottles with drinks, and more particularly with gaseous drinks with a high pulp content, containing in particular carbon dioxide under counter-pressure, the filling members of which comprise a gas valve communicating the pressurised gas of the liquid reservoir and the inside of the bottle and a liquid valve then communicating the reservoir and the bottle, wherein said screw-down valve comprises a plate integral with the central rod of the liquid valve and located upstream of said valve, with respect to the direction of flow of the liquid, said plate which is located beneath a guide brace, having orifices for the passage of the liquid which may be obturated by at least one diaphragm held applied on the lower face of the plate by its elasticity and subjected to the weight of the liquid located above.

3,773,093

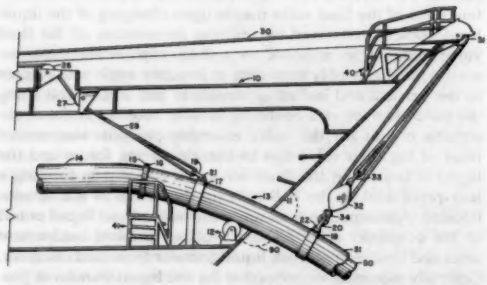
BOW LIQUID CARGO HANDLING SYSTEM

Gerard F. Eustace, Peekskill, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,141

Int. Cl. B65b *1/04*, *3/00*

U.S. Cl. 141—388 **8 Claims**



A tanker bow products line handling system adapted to be connected to a mooring products line floating in the water wherein the bow of the ship has an opening large enough to accommodate the mooring products line and lift systems for holding, connecting and disconnecting the mooring products line with the ship products line.

3,773,094

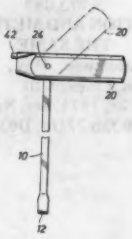
ANGULARLY ADJUSTABLE HANDLE FOR HAND TOOLS

Rainer Kuenzel, 9606 Meadowglen, Houston, Tex.

Filed July 2, 1971, Ser. No. 159,167

Int. Cl. B25g *1/00*

U.S. Cl. 145—61 G **6 Claims**



An adjustable handle for hand tools of the type having a shank to be rotated manually and wherein the handle may be adjusted angularly to different positions relative to the axis of the shank to increase the leverage obtainable to rotate the shank.

3,773,095

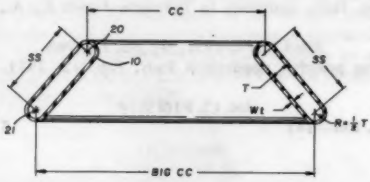
CONICALLY MOLDED AND SLOT-FORMED INNER TUBE FOR TIRES

Richard H. Paul, Indianapolis, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Filed July 8, 1971, Ser. No. 160,849

Int. Cl. B60c *5/04*

U.S. Cl. 152—349 **7 Claims**



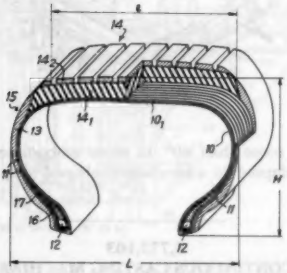
The invention relates to the field of manufacturing inner tubes for use in pneumatic tires, and more specifically relates to the production of an improved inner tube that is conically molded in slot form to obtain certain dimensional ratios in its uninflated condition that permit inflation to the usual toroidal form with minimal deviation in wall thickness so as to achieve a higher quality inner tube at a lower overall cost.

3,773,096

BELTED VEHICLE TIRES

Yves Masson, Paris, France

Filed Feb. 25, 1972, Ser. No. 229,403
Claims priority, application France, Mar. 1, 1971, 7107047
Int. Cl. B61c 9/18
U.S. Cl. 152—361 R 11 Claims



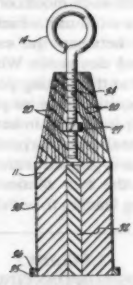
This invention relates to belted pneumatic tires, of the kind that have a low cross-section of ratio equal to or less than 0.8. According to the invention, at least the inner part of the tire tread between the carcass crown and the level of the hollows of the tread pattern is made entirely from a rubbery mixture having a high modulus of elasticity. This modulus may be greater than 60 kg/cm² at 100 percent elongation and said inner part has a thickness which is inherently sufficient to provide effective hooping and banding of the tire crown without recourse to a conventional breaker belt.

3,773,097

DEVICE FOR REPAIRING TIRE PUNCTURES

Gene M. Mullins, Monrovia, Calif., assignor to Edgar F. Whitmore, San Marino, Calif.

Continuation of Ser. No. 805,179, March 7, 1969, abandoned, which is a continuation-in-part of Ser. No. 713,454, March 15, 1968, abandoned. This application Apr. 21, 1971, Ser. No. 136,270
Int. Cl. B60c 21/06
U.S. Cl. 152—370 3 Claims



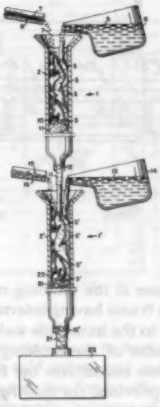
A repair device for sealing a puncture hole in a tire includes a plug made of rubber which is shaped to make a snug fit into the hole. When heated, the plug fuses to the tire casing.

3,773,098

METHOD OF STATIC MIXING TO PRODUCE METAL FOAM

Edward J. Rock, Blue Mounds, Wis., assignor to Johan Bjorksten, Madison, Wis.

Filed Feb. 4, 1972, Ser. No. 223,547
Int. Cl. B22d 27/00
U.S. Cl. 164—79 9 Claims



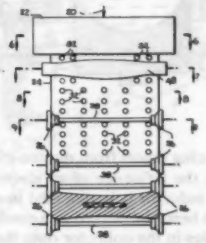
Ingredients required to make metal foam having particulate members such as glass beads or steel wires embedded therein are mixed in a static mixer having no moving parts.

3,773,099

CONTINUOUS CASTING OF STRANDS USING THERMAL STRESS REINFORCEMENT

Irving Rossi, Dunros Farm, James St., Morristown, N.J.

Filed Nov. 18, 1971, Ser. No. 199,988
Int. Cl. B22d 11/12
U.S. Cl. 164—89 12 Claims



Surfaces are reinforced against loads applied to one side by subjecting the opposite side to intense and continuous cooling to establish thermal stresses. This technique is applied in the continuous casting of slabs and billets by giving the slab and billet an initial concavity or at least restraining same from initial convexity and then subjecting its outer surface to the action of continuous and intense coolant sprays.

3,773,100

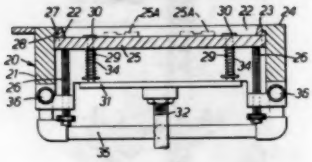
MOLDING BOX COMPRISING PATTERN FRAME HAVING INTERNAL LINING STRIPS

Desmond Leonard Mawson, Aston, near Sheffield, and Bernard Malone, Camberley, both of England, assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 881,276, Dec. 1, 1969, Pat. No. 3,664,406. This application Apr. 10, 1972, Ser. No. 242,853

Int. Cl. B22c *21/02, 7/04*

U.S. Cl. 164—237 **3 Claims**



A mold box for use in the molding of shell or stack molds comprises a pattern frame having internal lining strips that are detachably secured to the inner side walls of the pattern frame to constitute the sides of the molding space in the box. A movable pattern plate constitutes the bottom of the molding box and means are provided for moving the pattern plate into engagement with the lower edge of the lining strips so that the depth of the molding space in the box is determined by the width of the detachable lining strips.

3,773,101

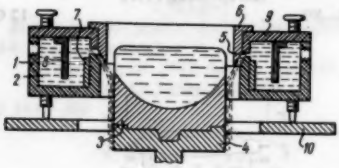
DEVICE FOR CONTINUOUS AND SEMI-CONTINUOUS CASTING OF METAL HAVING AN INDUCTOR

Zinovy Naumovich Getselev, prospekt Metallurgov, 73, kv. 29, Kuibyshev, U.S.S.R.

Filed Nov. 10, 1971, Ser. No. 197,268

Int. Cl. B22d *27/02*

U.S. Cl. 164—251 **4 Claims**



A plant for producing ingots from molten metal poured on a tray and formed by the influence of an electromagnetic field of an inductor said inductor being located in a space of a collector and the ingot being immersed in a cooling agent as it is discharged from holes in the collector onto the side surface of the ingot.

3,773,102

DIRECT CASTING OF CHANNEL-SHAPED STRIP

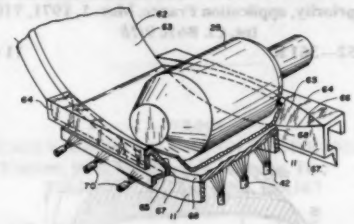
Charles Christian Gerding, 728 Gaywood Dr., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 119,143, Feb. 26, 1971, abandoned. This application Nov. 9, 1971, Ser. No. 197,090

Int. Cl. B22d *11/06*

U.S. Cl. 164—276 **11 Claims**

Strip of channel-like cross section is continuously cast from molten metal on the inside surface of an upright chill ring rotating about its horizontal axis, at each end of which contiguous flanges project inwardly inclined to the ring surface at an angle of more than 90°. In some embodiments, the apparatus is adapted to cast channel-shaped strip with fluted flanges.



3,773,103

CONTINUOUS CASTING MACHINE

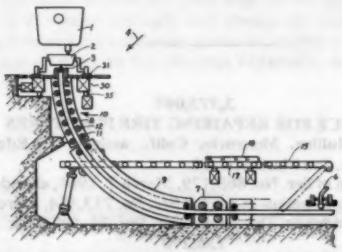
Max Burkhardt, Zurich, Switzerland; Horst Huber, Roselle Park, N.J.; Josef K. Zeller, Weesen, Switzerland; Christian Chateau, Saint-Chamond, France, and Markus Schmid, Zurich, Switzerland, assignors to Concast AG, Zurich, Switzerland and Concast Incorporated, New York, N.Y.

Filed July 20, 1971, Ser. No. 164,404

Claims priority, application Switzerland, July 21, 1970, 10889/70; Oct. 2, 1970, 14647/70

Int. Cl. B22d *11/06*

U.S. Cl. 164—282 **19 Claims**



A continuous casting machine is provided with a casting position and at least one preparation position. At least two molds are provided, with each mold connected to a section of a roller apron to form a mold unit which is so mounted that it is movable as a unit between the casting position and a preparation position and vice versa. While metal is being cast through one mold unit at the casting position, the other mold unit at a preparation position may be prepared for use in the next casting operation, including insertion of a dummy bar. When the mold unit is at the casting position, the movable section of the roller apron is aligned with a fixed section of the roller apron, so that the two sections form a continuous guideway for the casting leading to withdrawal rollers.

3,773,104

APPARATUS FOR CASTING METALS

Friedrich Kocks, Freiligrathstrasse 1, 4 Dusseldorf, Germany

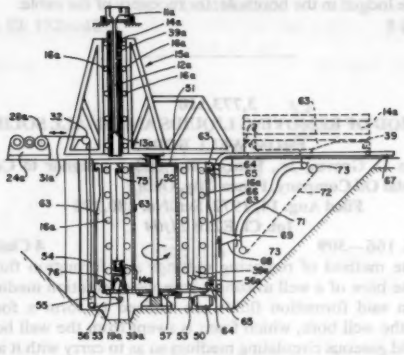
Division of Ser. No. 43,718, June 5, 1970, Pat. No. 3,683,999. This application Feb. 3, 1972, Ser. No. 223,182

Int. Cl. B22d *7/00, 33/02*

U.S. Cl. 164—323 **9 Claims**

A method and apparatus are provided for casting metals wherein the molten metal is cast into the top of an upright

ingot mold whose axis is in a generally vertical position, the mold is capped, and then rotated so that its axis is on the



horizontal position and cooling the metal in the mold while holding it with its axis in said horizontal position.

3,773,105

SEALING MEANS FOR A REGENERATIVE HEAT EXCHANGER

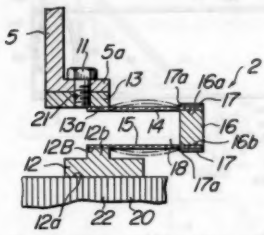
Yasuo Kondo, Anjo, Japan, assignor to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed Dec. 6, 1971, Ser. No. 205,010

Claims priority, application Japan, Dec. 26, 1970, 45/129606

Int. Cl. F28d *19/04*

U.S. Cl. 165—9 **2 Claims**



Sealing means for a heat exchanger having a rotary matrix type regenerator which is disposed across conduit means for high temperature fluid and a second conduit means for low temperature fluid, said sealing means including a pair of parallel annular flexible plates which are connected together at their outer peripheries through a ring member, one of said flexible plate being connected with an opening of one conduit means, the other of said conduit means having a sealing member at its inner periphery, said sealing member being forced in sealing contact with the regenerator by the pressure difference between the inside and outside of the conduit means.

3,773,106

ROTARY HEAT EXCHANGERS

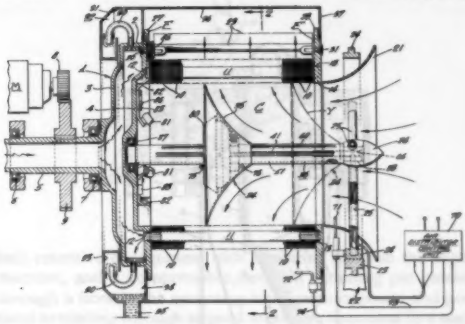
Stanley B. Levy, New Castle, Del., assignor to E. I. Dupont de Nemours & Company, Wilmington, Del.

Filed Sept. 15, 1971, Ser. No. 180,733

Int. Cl. B60h *1/00*

U.S. Cl. 165—39 **36 Claims**

A rotary heat exchanger comprising an array of closely spaced parallel annular thermally conductive fins mounted coaxially for rotation as a unit and a plurality of thermally conductive heat exchange tubes extending through the fins. The fins are arranged and rotated at a speed to convey a fluid outwardly between the fins and provide optimum heat exchange between said fluid and another fluid in the heat exchange tubes. The heat exchange tubes are constructed to provide substantially maximum area of fluid contact surface interiorly



of the tubes to minimize resistance to heat flow between the surface and the fluid in said tubes, and means are provided operable in conjunction with the fins to effect a substantial increase in fluid flow outwardly between the fins. Fluid distributing means is also provided to limit fluid flow through only the number of fins in the array required to provide optimum utilization of the heat exchanger according to the load requirement.

3,773,107

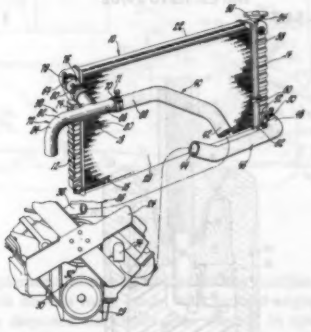
WATER COOLED ENGINE COOLING SYSTEM SAND TRAP

R. James Benner, Lansing, Mich., assignor to General Motors Corpration, Detroit, Mich.

Filed Sept. 18, 1972, Ser. No. 290,212

Int. Cl. F28f *19/00*

U.S. Cl. 165—51 **3 Claims**



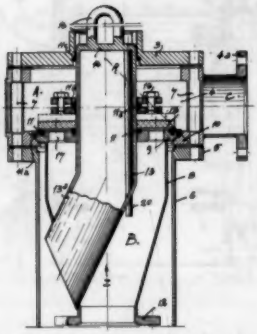
A protection system for the seal in a water pump for an engine coolant system including a radiator inlet hose connected to a tubular sand trap having ends clamped on the inlet hose and the radiator inlet fitting of the engine coolant system to provide positive retention of the trap. The trap includes a first turn of approximately 90° between the inlet hose and the inlet fitting. A bent depending trap sump on the trap has an inlet aligned with the inlet to the 90° turn to separate and retain sand particles.

3,773,108

CONCERNING THE WELL HEADS SUITABLE TO SUPPORT SUBMERSED PUMPS FOR WATER EXTRACTION

Paolo Chiaves, C.so Re Umberto 48, Torino, Italy

Filed Dec. 1, 1971, Ser. No. 203,656
Claims priority, application Italy, Dec. 2, 1970, 71016 A/70
Int. Cl. E21b *33/03*
U.S. Cl. 166—85 **7 Claims**



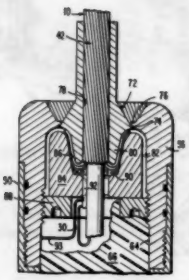
A well head is provided with a centrally disposed tubular body that permits the water tight passage of cables connected to a submersed pump. A disc valve that is slidably movable to an open, upper position by means of water pressure and which is also movable to a closed, lower position by the force of gravity, is mounted on the tubular body. Annular seal means are provided between the convex outer edge of a transverse, perforated base that is secured to the body and the concave opposing surface of an annular seat.

3,773,109

ELECTRICAL CABLE AND BOREHOLE LOGGING SYSTEM

Howard C. Eberline, Edmond, Okla., assignor to Kerr-McGee Corporation, Oklahoma City, Oklahoma

Filed Oct. 29, 1970, Ser. No. 85,168
Int. Cl. E21b *29/02*
U.S. Cl. 166—54.5 **11 Claims**



Low-noise electrical cable includes a coaxial transmission line having a central conductor, a layer of insulation, and a tubular conductor sheathing the insulation, another layer of insulation sheathing the tubular conductor, a composite layer of insulated conductors and semiconductive material, two layers of semiconductive tape, and two layers of armor. In borehole radiation logging, the cable is connected to a downhole probe. Signals are transmitted to the surface along the central conductor, with the tubular conductor and armor grounded and power supplied to the probe through conductors in the composite layer. The probe includes exothermic material which is ignited to sever the cable from the probe should the probe become lodged in the borehole, for recovery of the cable.

3,773,110

METHOD OF REMOVING LIQUIDS AND SMALL SOLIDS FROM WELL BORES

William L. Groves, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Aug. 14, 1972, Ser. No. 280,293
Int. Cl. E21b *21/04*
U.S. Cl. 166—309 **4 Claims**

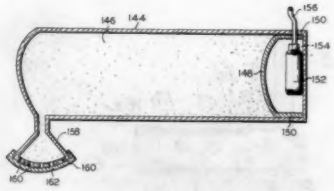
In the method of removing cuttings and formation fluids from the bore of a well utlizing a gaseous circulation medium wherein said formation fluids are utilized to form a foam within the well bore, which foam is swept from the well bore with said gaseous circulating medium so as to carry with it any of said cuttings, the improvement which comprises injecting into said well a foaming agent comprising an alkali metal 3-hydroxy (C_{12}–C_{14}) alkyl sulfonate.

3,773,111

FIRE EXTINGUISHING APPARATUS

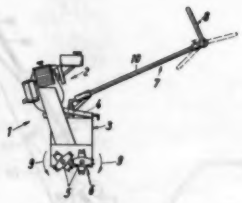
Byron G. Dunn, 6831 Orchid Ln., Dallas, Tex.

Filed Apr. 5, 1971, Ser. No. 131,333
Int. Cl. A62c *13/26*
U.S. Cl. 169—26 **51 Claims**



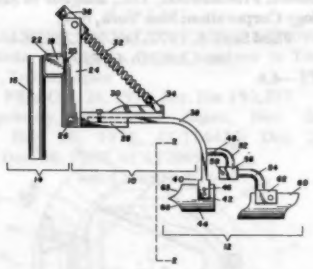
An automatic fire extinguishing apparatus in which a pyrotechnic wire or cord is stretched above the area to be protected, and leads to a fire extinguisher mounted adjacent the area to be protected. The fire extinguisher includes a propellant container operatively connected to the pyrotechnic cord and containing a suitable material adapted to generate gas pressure, plug means closing the propellant container and removable as a result of the burning of the pyrotechnic cord and an outer container having a propellant container mounted therein and containing a suitable fire extinguishing material such as carbon tetrachloride or sodium carbonate, the outer container also having a plurality of apertures oriented such that the entire area to be protected will be blanketed by the fire extinguishing material when the fire extinguishing material is forced through the apertures under pressure and frangible sealing means covering the apertures and adapted to rupture when the propellant applies sufficient pressure to the fire extinguishing material in the outer container. The extinguishing apparatus is particularly useful for Class B fires and is conveniently mounted in a range hood over a cooking range, beneath the hood of an automobile, as an ornament at the top of a Christmas tree, in a laboratory hood over a laboratory bench or as a self-contained unit above a furnace, an air conditioning motor or the like.

3,773,112
MOTOR OPERATED HAND HOE
Eugen Zinck, Huffelsheimer Str. 2, Bad Kreuznach, Germany
Filed Feb. 11, 1970, Ser. No. 10,429
Int. Cl. A01b *33/00*
U.S. Cl. 172—42 5 Claims



A motor operated hand hoe in which the advancing speed, working direction, and hoeing depth is controlled by varying the load exerted upon the soil by the hoe tools associated with one shaft and the load exerted upon the soil by the hoe tools associated with another shaft in conformity with the desired work result.

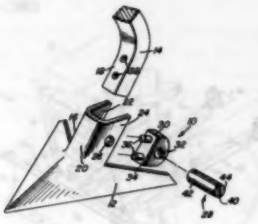
3,773,113
CULTIVATOR
Douglas C. Nixon, 5864 Carson Rd., Akron, Mich.
Filed Jan. 19, 1971, Ser. No. 107,725
Int. Cl. A01b *19/00*
U.S. Cl. 172—642 3 Claims



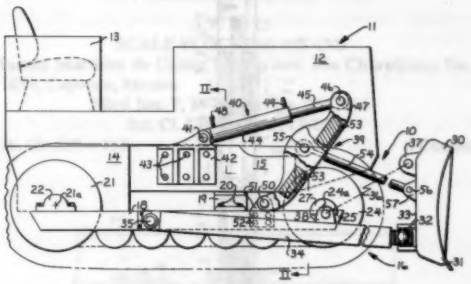
Apparatus for converting a field cultivator shank assembly to a crop cultivator including a "T" standard coupled to a crop cultivating tool; said standard is adapted to be coupled to a cultivator frame. The crop cultivating tool includes a shank, a blade support pivotally connected to one end of the shank, and resiliently coupled to the other end of the shank, and a plurality of blades attached to said blade support. The blades are vertically and rotatably adjustable.

3,773,114
SHOVEL COUPLING
Robert M. Griffin, Chester, Mont.
Filed Mar. 31, 1972, Ser. No. 240,048
Int. Cl. A01b *35/20*
U.S. Cl. 172—762 7 Claims

A coupling for conveniently attaching a cultivator shovel to a shank member, said coupling comprising a rigid mounting block with a relatively large planar surface in snug engagement with a correspondingly shaped mounting surface of the shank member whereby the forces are distributed over a relatively large area, a pair of fingers projecting from the block into retentive engagement with mounting holes in the shank member, and a compressible, resilient retaining pin passing through a bore in the mounting block with opposite end portions extending through aligned mounting apertures in a neck portion of the cultivator shovel.



3,773,115
IMPLEMENT MOUNTING AND ACTUATING MECHANISM
Jerrold R. Asal, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Mar. 6, 1972, Ser. No. 231,998
Int. Cl. E02f *3/76*
U.S. Cl. 172—803 9 Claims



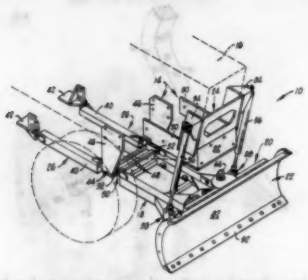
An implement mounting and actuating mechanism for vehicles which have a main body with ground-engaging traction members disposed on either side thereof in spaced relation thereto and which have an implement disposed adjacent one end thereof. A mounting frame which supports the implement has support arms which extend along each side of the vehicle for pivotal connection thereto. Powered actuators for the implement are disposed and pivotally supported on the main body intermediate the opposite ends of the vehicle. Force-transmitting linkage is mounted on a portion of the main body at a point vertically below the pivotal support for the powered actuators which linkage interconnects the powered actuators and the implement for selective elevational movement of the implement.

3,773,116

BULLDOZER MEANS WITH A PIVOTABLE BLADE

John G. Coontz, P.O. Box 104, Kiowa, Kans.

Filed Mar. 1, 1971, Ser. No. 119,477
Int. Cl. E02f *3/76*
U.S. Cl. 172—804 2 Claims



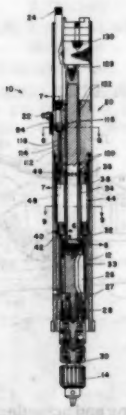
A bulldozer assembly has a blade support pivotally mountable with a tractor to be pivoted generally vertically. A blade mount is transversely pivotally mounted on the outer end of the blade support. A blade is pivotally mounted on the blade mount to tilt the blade in an upright plane.

3,773,117

REVERSIBLE DRIVE TOOL

Paul E. Dussel, Ravenna, Ohio, assignor to Thomas C. Wilson, Inc., Long Island City, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,680
Int. Cl. B23q *5/22*; F15b *13/06*; F01b *21/04*
U.S. Cl. 173—4 11 Claims



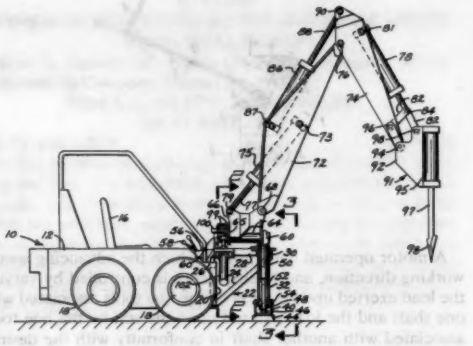
A pneumatically driven tool for rotating a tool bit while advancing the bit into a work piece. The direction of rotation of the tool bit is reversed and the bit retracted from the work piece when a predetermined torque level is reached. The tool consists of a housing, an air motor within the housing for rotating the tool bit, a piston assembly connected to the air motor and slidable in the housing for advancing the tool bit into and out of the work piece, a control valve assembly for regulating air flow to the air motor and the piston, and a longitudinally divided tube supplying the air connections between the air control valve and the air motor.

3,773,118

UTILITY DEVICE

Douglas G. Shanks, 5932 Jeffery Ln.; Richard E. Seed, 5803 Brainard, and Arthur J. Holmes, 5833 Winding Way, all of Sylvania, Ohio

Filed Jan. 24, 1972, Ser. No. 220,268
Int. Cl. E21c *11/02*
U.S. Cl. 173—43 8 Claims



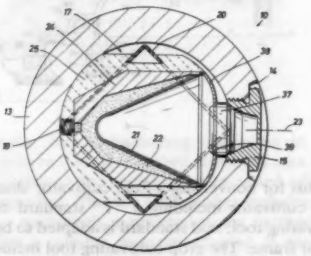
Disclosed is a utility device such as a pneumatic hammer universally mounted upon an extendabe arm and boom arrangement capable of being attached to a vehicle. The pneumatic hammer is mounted in a manner that provides great multidirectional mobility to the hammer.

3,773,119

PERFORATING APPARATUS

James B. Shore, Friendswood, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,364
Int. Cl. E21b *43/117*
U.S. Cl. 175—4.6 18 Claims



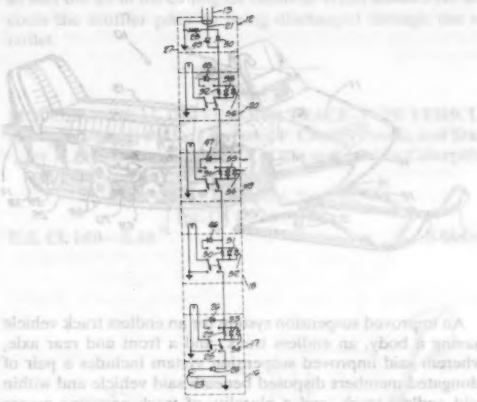
In the representative embodiment of the present invention disclosed herein, a group of shaped explosive charges are respectively mounted in diametrically-opposed lateral openings formed at spaced intervals along the length of an elongated expendable tubular member sized for reception in a typical end-loaded perforating carrier. Opposed locking lugs are cooperatively arranged on the shaped charges for interlocking engagement with the edges of the openings to secure the charges to the expendable tube. Once the charges are mounted, the assembly is installed in the carrier so that the charges are respectively facing and aligned with lateral ports in the side walls of the carrier. In this manner, when port plugs are installed in the ports, a domed retainer of a yieldable material on the forward end of each charge will be partially collapsed for tightly anchoring the shaped charges in position in the carrier.

3,773,120

SELECTIVE FIRING INDICATOR AND RECORDER

Stanley G. Stroud, 8211 Katy Freeway, Apt. 43, Houston, Tex., and James D. Estes, 8619 Nairn, Houston, Tex.

Filed Aug. 2, 1972, Ser. No. 277,408
Int. Cl. E21b *43/116*
U.S. Cl. 175—4.55 9 Claims



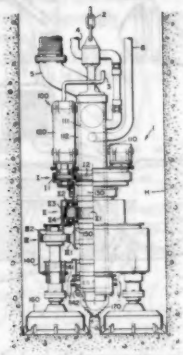
In a multiple perforating gun wherein each in a series of guns is successively fired, the firing arming the next gun in the series, resistors are provided in series with the gun actuating circuit in such a fashion, and in connection with surface control, readout, and recorder equipment, that the condition of the tool is continuously displayed and indicated, whereby a tally may be kept as to the exact guns fired, and down-the-hole irregularities such as shorts or open circuits may be evidenced.

3,773,121

REACTION MINIMIZED EARTH BORING

Nobuhisa Ikeda, Kanagawa, Japan, assignor to Tone Boring Company, Tokyo, Japan

Filed Oct. 26, 1971, Ser. No. 192,217
Claims priority, application Japan, Nov. 20, 1970, 45/102536; Dec. 18, 1970, 45/114426; Dec. 25, 1970, 45/129571; Dec. 30, 1970, 45/127099
Int. Cl. E21b *3/10*
U.S. Cl. 175—95 4 Claims



Earth boring using a machine having a high speed motor and a plurality of cutters disposed at mechanically balanced positions, said cutters being rotated about their own axes while revolving about a common axis so that the reaction moment acting on a support for said the motor can be substantially minimized.

3,773,122

ROCK DRILLING TOOL

Franz Chromy, Feldkirch-Levis, Austria, assignor to Palar (Curacao) N.V. Netherlands

Filed June 7, 1972, Ser. No. 260,562
Claims priority, application Germany, June 16, 1971, P 21 29 913.8
Int. Cl. E21c *13/06*
U.S. Cl. 175—385 11 Claims

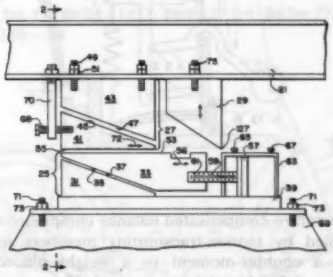
A rock drilling tool, such as used with a hammer drill, consists of an axially extending shank and a drilling tool head at one end of the shank which provides the rock drilling or cutting action. The drilling tool head includes a centrally positioned axially extending centering projection with at least three angularly spaced drilling fingers disposed radially outwardly from the centering projection and forming therebetween an annular recess which extends inwardly into the drilling tool head from the axial end surfaces of the drilling fingers. Each drilling finger has a drilling tooth on its axial end surface and a circle including the radially outer surfaces of the drilling teeth has a greater diameter than the diameter of the shank. The arrangement of the centering projection, the spaced drilling fingers and the annular recess affords efficient removal of drilled material and reduced friction between the hole being drilled and the drilling tool.

3,773,123

SCALE BLOCKING MEANS

Manuel Martinez de Castro Lopez, Ave. Rio Churubusco No. 434, Coyocan, Mexico

Filed Jan. 7, 1972, Ser. No. 216,014
Int. Cl. G01g *23/02, 19/08*
U.S. Cl. 177—155 8 Claims

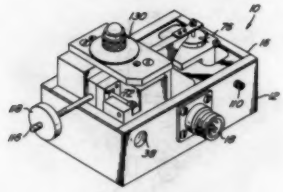


A sytem for blocking the weighing mechanism of a scale, including a plurality of wedges which are movable into and out of contact with the weighing mechanism to partially or totally block the movement thereof.

3,773,124
ELECTRONIC WEIGHT TRANSMITTER

Kenneth W. Bullivant, Glassboro, N.J., assignor to K-Tron Corporation, Glassboro, N.J.

Filed Aug. 16, 1972, Ser. No. 281,250
Int. Cl. G01g 3/14
U.S. Cl. 177—210 8 Claims

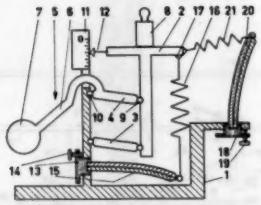


An electronic weight transmitter which produces an electrical signal proportional to the gross or net weight applied thereto. The electronic weight transmitter utilizes a parallelogram structure having substantially frictionless pivots at three of its pivot points and a torsion bar at its fourth pivot point. The parallelogram structure is mounted to a base and the weight to be measured is applied to the parallelogram structure. Movement of the parallelogram structure is restrained by the torsion bar. Movement of the parallelogram structure against the restraining force of the torsion bar is converted into an electrical signal by means of a linear variable differential transformer. The core of the linear variable differential transformer is mounted for movement with the parallelogram structure and the windings of the linear variable differential transformer are mounted on the base.

3,773,125
BALANCE WITH TEMPERATURE COMPENSATION

Kaspar Saner, Dubendorf, Switzerland, assignor to Wirth, Gallo & Co., Zurich, Switzerland

Filed May 9, 1972, Ser. No. 251,649
Claims priority, application Switzerland, July 16, 1971, 10474/71
Int. Cl. G01g 3/18
U.S. Cl. 177—227 9 Claims

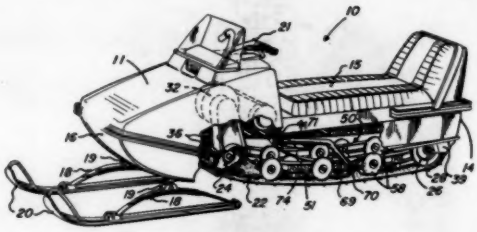


A temperature-compensated balance comprising a balance pan coupled by motion-transmitting members to a mass providing a counter-moment to a weight placed on the balance pan. A first bimetal strip is coupled between the frame of the balance and the balance pan to provide a zero point temperature compensation substantially independent of the load on the balance pan. A second bimetal strip, having its axis substantially perpendicular to that of the first bimetal strip, is provided to compensate for the steepness of the characteristic of the balance.

3,773,126
SNOWMOBILE SUSPENSION SYSTEM

Gerald O. Irvine, Ironton, Minn., assignor to Scorpion, Inc., Crosby, Minn.

Filed Sept. 2, 1971, Ser. No. 177,378
Int. Cl. B62m 27/02
U.S. Cl. 180—5 R 19 Claims

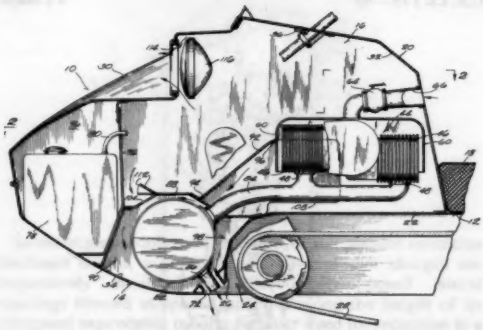


An improved suspension system for an endless track vehicle having a body, an endless track, and a front and rear axle, wherein said improved suspension system includes a pair of elongated members disposed beneath said vehicle and within said endless track, and a plurality of track engaging means supported by said elongated members, each of said elongated members having one end connected with the rear axle of the vehicle and the other end extending forwardly toward the front axle of said vehicle with the forward portion of each of the members being resiliently mounted with respect to the vehicle frame by a support means.

3,773,127
SNOWMOBILE HAVING NOISE-SUPPRESSION ENGINE COMPARTMENT

Olav Aaen, Kenosha, Wis.; Kenneth J. Friend, Waukegan, Ill.; Eugene Hackbarth, Kenosha, Wis., and Harry M. Ward, III, Waukegan, Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Dec. 29, 1972, Ser. No. 319,891
Int. Cl. B60k 11/06, 13/06
U.S. Cl. 180—5 R 18 Claims



Disclosed herein is a snowmobile including a hood extending from a frame portion to a transverse partition extending upwardly from a frame portion and defining, with the frame portion and the transverse partition, a substantially closed and substantially air tight engine compartment. A wall extending in the engine compartment divides the engine compartment into an air supply chamber and an exiting air chamber. The engine muffler and other engine exhaust system components

are located within the exiting air chamber which includes one or more air outlets, preferably located in the bottom portion of the engine compartment and forwardly of the tunnel housing the snowmobile track, for discharging heated air to the outside. Ambient air is introduced into the air supply chamber through a pumping means, such as a fan operably connected to the engine. The muffler is located relative to the air outlet so that the air in the exiting air chamber is circulated over and cools the muffler prior to being discharged through the air outlet.

3,773,128

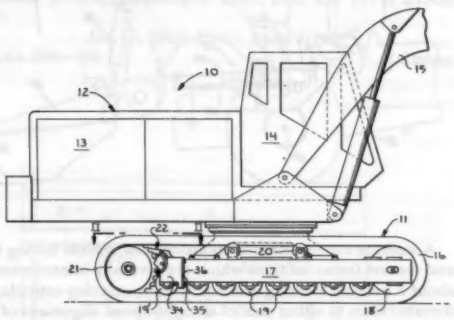
MODULAR FINAL DRIVE FOR A TRACK-TYPE VEHICLE

Harry H. Bowen, Pekin; Lawrence F. Clancy, Peoria, and Stanley A. Jorgensen, Oswego, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 3, 1972, Ser. No. 240,734

Int. Cl. B62d *11/04*

U.S. Cl. 180—6.48 **8 Claims**



A modular final drive for a track-type vehicle includes a housing containing a speed reduction gear train which drives a track engaging sprocket. The housing is detachably mounted solely on the rearward end of a track roller frame to facilitate expeditious assembly and servicing.

3,773,129

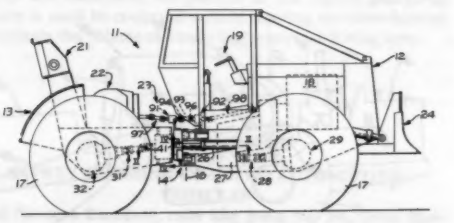
UNITARY COUPLING FOR ARTICULATED VEHICLES

Rodney H. Anderson, Naperville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed June 14, 1971, Ser. No. 152,511

Int. Cl. B60d *1/02*

U.S. Cl. 180—14 B **4 Claims**



A compact unitary coupling for an articulated vehicle, including a generally annular coupling member having a cylindrical portion of relatively short length and large diameter which is trunnion mounted by means of stepped bearings in a longitudinal bore formed by one of the vehicle sections, the coupling member integrally forming bracket means to provide an articulated pivot joint with the other vehicle section and to pivotally support steering motor means coupled to the other vehicle section, a central drive shaft portion being mounted within the coupling member by bearings and connected with separate drive shafts in each of the vehicle sections by means of universal joints.

3,773,130

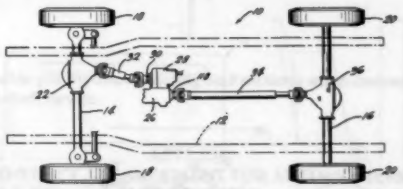
VARIABLE TORQUE TRANSMISSION

Otto Mueller, 13 Byfield Ln., Dearborn, Mich.

Division of Ser. No. 78,353, Oct. 6, 1970, abandoned, which is a division of Ser. No. 823,872, May 12, 1969, Pat. No. 3,577,803. This application Mar. 31, 1972, Ser. No. 240,242

Int. Cl. B62d *61/10*; B60k *17/34*

U.S. Cl. 180—24.09 **5 Claims**



Apparatus for a four or six wheel drive motor vehicle which includes a variable ratio torque transmission assembly connected by drive shafts to front and rear axles. The variable ratio torque transmission assembly has a rotary input member which receives torque from the engine, and first and second rotary output members connected to the front and rear axles respectively. The output members are coupled together by a hydraulic torque transmitting mechanism which includes means for selectively setting the ratio of the input torque that is transmitted to the two output members and thereby to the front and rear axles. This arrangement permits any desired ratio of torque transmission, such as one-third of the torque being transmitted to the front axle and two-thirds of the torque being transmitted to the rear axle. The assembly also includes a remote control means whereby the driver of the vehicle can lock the mechanism between the two output members so that full or maximum torque is transmitted to the front axle.

3,773,131

ELECTRIC AUTOCYCLE

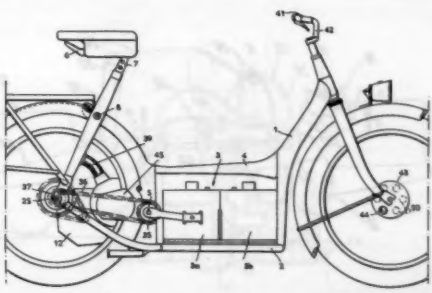
Eric Jaulmes, Paris, France, assignor to Ateliers De La Motobecane, Pantin (Seine Saint Denis), France

Filed Mar. 23, 1971, Ser. No. 127,194

Claims priority, application France, Mar. 31, 1970, 7011382

Int. Cl. B62d *61/02*; B60k *17/26*; B62m *7/12*

U.S. Cl. 180—34 **6 Claims**



A pedal-operable vehicle is provided with electric means to operate the same which comprises a storage battery, a rela-

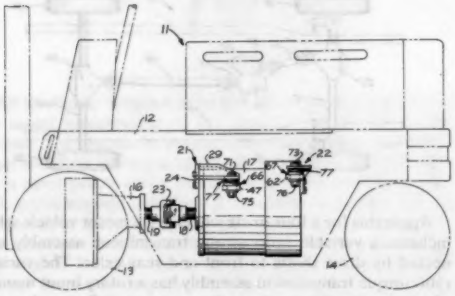
tively thin motor, a speed reducing transmission which includes a free wheel between the motor and one of the wheels of the vehicle and an electronic control means for the motor which provides for electrical operation of the motor only after the vehicle has reached a predetermined maximum speed.

3,773,132

ELECTRIC PROPULSION MOTOR MOUNTING AND DRIVE MEANS

Edward F. Gawlik, Seven Hills, and Richard A. Schwehr, Mentor, both of Ohio, assignors to Towmotor Corporation, Cleveland, Ohio

Filed Sept. 27, 1971, Ser. No. 184,002
Int. Cl. B60k *1/00*
U.S. Cl. 180—64 R **3 Claims**



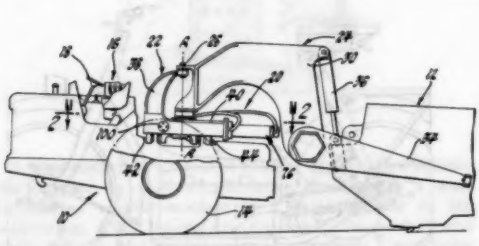
A motor mounting and drive means for an electric propulsion motor of an electric lift truck, or the like, which reduces road shock into the motor as well as reduces motor vibration into the vehicle chassis. The mounting and drive arrangement comprise a pair of support brackets which are rigidly secured to the opposite end faces of the electric propulsion or traction motor and resiliently secured to the vehicle frame to suspend the motor in a horizontal position subjacent a compartment of the vehicle for housing the batteries for supplying electrical power to the motor. In addition a universal joint is employed to couple the drive shaft of the electric motor to a differential for driving one set of wheels of the vehicle.

3,773,133

STEERING MECHANISM FOR ARTICULATED VEHICLE

Albert Borzi, Euclid, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1972, Ser. No. 290,452
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 B **2 Claims**



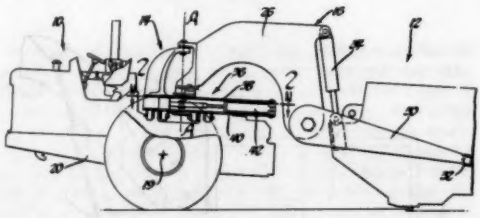
A steering mechanism for an articulated vehicle having a two-wheeled tractor unit and a trailing unit which is pivotally interconnected about a vertical steering axis for relative steering articulation therebetween to either side of straight-ahead alignment of the units. The steering mechanism includes a steering frame which houses a pinion fixed with the trailing unit and supports a pair of double-acting hydraulic steering cylinders, each of which has a piston formed with a rack which meshes with the pinion. Each steering cylinder is rigidly supported at its forward end by the steering frame while the rack is maintained in engagement with the pinion by a guide block that is located in transverse alignment with the pinion for maintaining engagement between the gear teeth of the rack and pinion.

3,773,134

STEERING MECHANISM FOR ARTICULATED VEHICLE

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1972, Ser. No. 290,453
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 B **4 Claims**



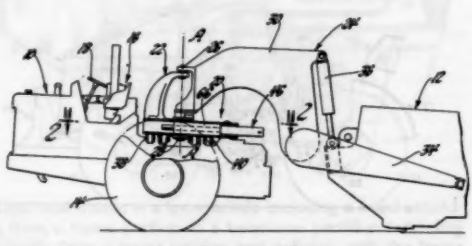
A steering mechanism for an articulated vehicle having first and second frame sections which are pivotally interconnected about a vertical steering axis for relative steering articulation therebetween to either side of straight-ahead alignment of the frame sections. The steering mechanism is characterized by having a pinion fixed to one of the frame sections, while the other frame section supports a pair of double-acting hydraulic steering cylinders positioned along axes which are parallel to the longitudinal axis of the vehicle. The piston portion of each hydraulic cylinder is formed with a rack which meshes with the pinion and is maintained in engagement therewith through a guide roller having a pair of radially extending flanges.

3,773,135

STEERING MECHANISM FOR ARTICULATED VEHICLE

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1972, Ser. No. 290,454
Int. Cl. B62d *5/10*
U.S. Cl. 180—79.2 B **4 Claims**



A steering mechanism for an articulated vehicle having first and second frame sections which are pivotally interconnected about a vertical steering axis for relative steering articulation

therebetween to either side of straight-ahead alignment of the frame sections. The steering mechanism is characterized by having a pinion fixed with one of the frame sections, while the other frame section supports a pair of double-acting hydraulic steering cylinders, each of which has a piston formed with a rack which meshes with the pinion. Each steering cylinder is pivotally supported at its forward end while the rack is maintained in engagement with the pinion by a guide roller that is located in transverse alignment with the pinion and is adjustable in position for assuring proper engagement between the gear teeth of the rack and pinion.

3,773,136

AUTOMATIC MOTORWAY DRIVING SYSTEM FOR MOTOR VEHICLES

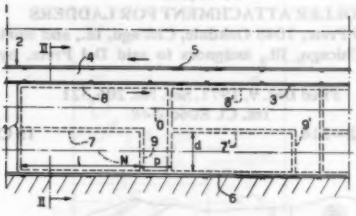
Mario Palazzetti, and Bruno Cavallarin, both of Turin, Italy, assignors to FIAT Societa per Azioni, Turin, Italy

Filed Jan. 14, 1972, Ser. No. 217,905

Claims priority, application Italy, Jan. 29, 1971, 67306 A/71

Int. Cl. B60k *27/06;* **B62d** *1/28*

U.S. Cl. 180—98 **5 Claims**



This invention relates to an automatic motorway driving system in which passive rectangular coils are buried in a motorway, preferably in both the normal driving and overtaking lanes, for cooperation with a front transmitter loop and two rear receiver loops carried by each vehicle. Each vehicle has an alternating current generator which applies an alternating current to the transmitter loop and which scans a range of frequencies cyclically so that signals picked up through inductive linkage of the receiver loops with the buried coils can provide servo control signals indicative of the distance of preceding vehicles or the presence of overtaking vehicles. The two receiver loops symmetrically placed at opposite sides of the vehicle and electronic comparison of the signals picked-up thereby is used to control a vehicle steering servomechanism to maintain the vehicle centrally in the normal driving lane.

3,773,137

SAFETY STEERING GEAR FOR AUTOMOTIVE VEHICLES

Angel Navarro Escudero, calle San Juan, No. 94, Gava (Barcelona), Spain

Filed June 21, 1971, Ser. No. 155,040

Claims priority, application Spain, June 19, 1970, 159569

Int. Cl. B60k *27/08*

U.S. Cl. 180—103 **3 Claims**

A safety steering column having a telescopic two section shaft with a ferrule slideable on one of said sections and detachably connected to the other section for movement therewith to operate a motor cut-off switch and including a

detachable pin for disconnecting said sections when desired as an anti-theft device.

3,773,138

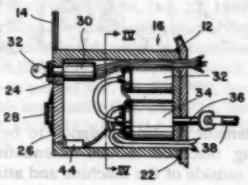
ANTI-THEFT ARRANGEMENT FOR AUTOMOBILES

William S. Killmeyer, 2017 Clifton St., Youngstown, Ohio

Filed June 22, 1971, Ser. No. 155,574

Int. Cl. B60r *25/00*

U.S. Cl. 180—114 **3 Claims**



An automobile ignition system in which the coil, distributor, ignition switch, and related wiring are housed in a heavy walled enclosure securely mounted to the vehicle firewall. The enclosure has a locking cover and prevents the "hot wiring" of the ignition system.

3,773,139

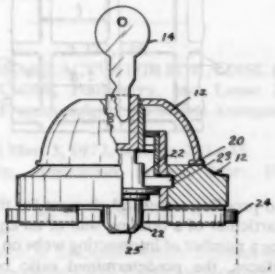
AUTOMOBILE THEFT PREVENTION LOCK

Anthony O. Landi, 1225 W. 30th St., Erie, Pa.

Filed Aug. 11, 1971, Ser. No. 170,902

Int. Cl. B60r *25/00*

U.S. Cl. 180—114 **2 Claims**



The specification discloses an automobile theft prevention lock which will shut off and lock the fuel supply, prevent ac-

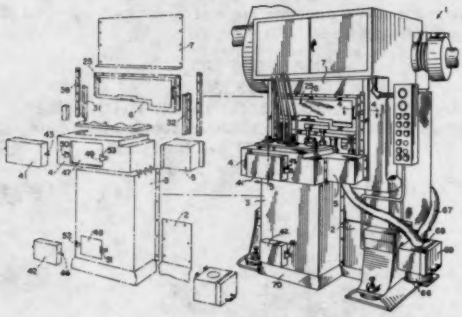
cess to the carburetor, and thereby prevent theft. The device has a lock compartment and a valve in the compartment, which will shut off the fuel supply when actuated from within the passenger compartment. The hood of the automobile must then be raised, and the proper key inserted to open the compartment and reset the valve before the automobile fuel can reach the carburetor and thus the automobile can be operated.

3,773,140

NOISE ATTENUATING KIT

Gautam K. Mahajan, Chicago; Norbert L. Wright, Park Ridge, and Albert C. Schnell, Hickory Hills, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed May 30, 1972, Ser. No. 257,506
Int. Cl. G10k *11/00*
U.S. Cl. 181—33 K **17 Claims**



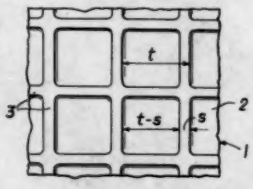
A noise abatement housing designed to be fitted on to a noise producing machine. Sound attenuating panels are mounted at the outside of the machine and attached to major structural elements of the machine. Sound attenuating devices are placed at some orifices of the machine and about some structural noise producing elements.

3,773,141

SOUND-PROOFING WALL-FORMING STRUCTURAL ELEMENT

Gerhard Thien, and Heinz Fachbach, both of Graz, Austria

Filed Sept. 22, 1972, Ser. No. 291,158
Int. Cl. E04b
U.S. Cl. 181—33 G **3 Claims**



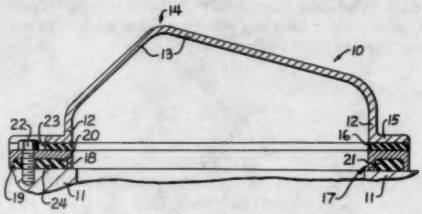
A sound-proofing structural element for the formation of a wall, in particular of a housing wall of an engine or machine, comprising a number of intersecting webs on at least one of its outer surfaces, the predetermined ratio between the wall thickness of the structural element, the dimensions of the webs and the clearances between them being such as to reduce the sound generation of the structural element.

3,773,142

NOISE-ISOLATED ROCKER ARM COVER

Gary O. Bragg, Dunlap, and Nelson A. Jones, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Oct. 2, 1972, Ser. No. 294,255
Int. Cl. E04b *1/99*; G10k *11/04*
U.S. Cl. 181—33 K **12 Claims**



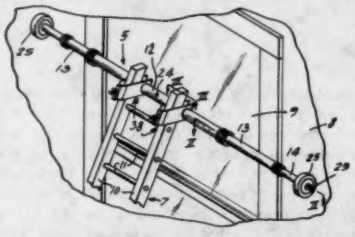
A rocker arm cover has a circumferential flange bonded to an underlying elastomeric pad. The pad is further bonded to an underlying channel member having a gasket disposed therein. Circumferentially disposed cap screws extend through the channel member and gasket to removably attach the integrated cover assembly to the head or block of an internal combustion engine.

3,773,143

ROLLER ATTACHMENT FOR LADDERS

Cosimo Del Prete, 1048 Oakdale, Chicago, Ill., and Burton L. Siegal, Chicago, Ill., assignors to said Del Prete, by said Siegal

Filed Dec. 9, 1971, Ser. No. 206,321
Int. Cl. E06c *7/48*
U.S. Cl. 182—214 **15 Claims**



A roller attachment for ladders comprises a telescopically adjustable bar carrying roller wheels at its opposite ends and having adjustably mounted clamps receptive of upper ends of the stiles of a ladder, enabling the upper end of the ladder to be easily moved vertically along a building face, especially with the roller bar straddling a building opening such as a window. Among features of novelty are the clamps, telescoping control for the bar sections, and the wheel mounting.

3,773,144

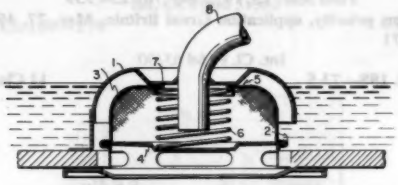
STRAINER ARRANGEMENT FOR THE OIL SUMP OF INTERNAL COMBUSTION ENGINES

Erich Hummel, Nelkenweg 17, 33 Braunschweig-Querum, Germany

Continuation of Ser. No. 760,102, Sept. 16, 1968, abandoned. This application Nov. 13, 1972, Ser. No. 306,279
Int. Cl. F01m *1/10*
U.S. Cl. 184—6.24 **3 Claims**

A strainer for the oil sump of an internal combustion engine in which the strainer is composed of a wire net and has a body

portion. The strainer surrounds a suction pipe with a closing member for the strainer and a spring in the strainer to normally press a border of an opening of the net against the closing member and to permit inward opening against the force of the spring when the wire net is blocked.

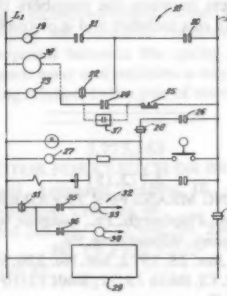


3,773,145

SMOKE AND FIRE DETECTOR FOR AUTOMATIC ELEVATOR SYSTEM

John J. Drexler, Moline, Ill., assignor to Montgomery Elevator Company, Moline, Ill.

Filed Mar. 25, 1971, Ser. No. 128,003
Int. Cl. B66b *5/00*
U.S. Cl. 187—29 R **11 Claims**



An automatic elevator system having photoelectric means for preventing closing of the elevator door upon detection of an obstruction in the doorway. The system includes control means associated with the photoelectric means for detecting the presence of smoke in the elevator hatchway and conditioning the system as a result of such detection for an emergency mode of operation. The control means further includes means for detecting an abnormally high temperature in the hatchway for similarly conditioning the system. The system may be so conditioned as to cause the elevator car to automatically move to a preselected floor level, such as the main floor level, under such abnormal hatchway conditions.

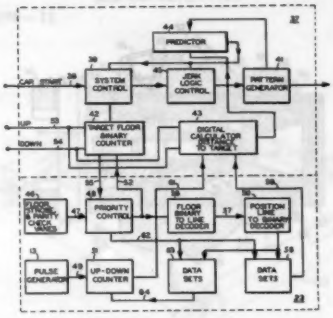
3,773,146

ELEVATOR ELECTRONIC POSITION DEVICE

George S. Dixon, Jr.; Edward O. Gilbert, both of Ann Arbor, Mich., and Gerald D. Robaszkiewicz, Toledo, Ohio, assignors to Reliance Electric Company, Cleveland, Ohio

Filed May 9, 1972, Ser. No. 251,793
Int. Cl. B66b *1/18*
U.S. Cl. 187—29 R **20 Claims**

An electronic (solid state) circuit provides digital signals indicating actual car position during travel, target floor or destination position, and actual floor number position of the car when the car is at rest. Actual car position is provided in 0.01 foot increments as a count from a counter operatively coupled to the car and checked as the car reaches predetermined locations along its travel. Correction means correct any count error when position is checked. Actual floor position is decoded from the count. Advance of the car transfers the target floor at appropriate times. Target floor signals and actual car position signals are maintained mutually exclusive by interlocks to enable common circuits to be employed for both.

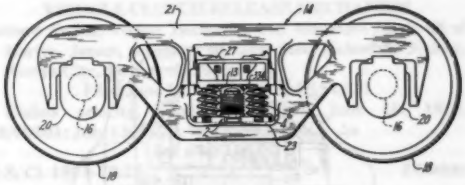


3,773,147

TRUCK DAMPENING

Donald Wiebe, R.D. No. 3, Sewickley, Pa.

Division of Ser. No. 801,884, Oct. 23, 1968, Pat. No. 3,626,864, which is a continuation-in-part of Ser. No. 534,220, March 14, 1966, abandoned, which is a continuation-in-part of Ser. No. 468,850, July 1, 1965, abandoned, which is a continuation-in-part of Ser. No. 579,709, Sept. 15, 1966, abandoned. This application Oct. 28, 1971, Ser. No. 193,498
Int. Cl. B61f *5/12, 5/14;* **B61h** *11/00*
U.S. Cl. 188—33 **9 Claims**



A method of absorbing energy for railway freight cars and more particularly a method of damping the movement of a railway car with respect to the supporting trucks therefor, by the use of fluid snubbers.

3,773,148

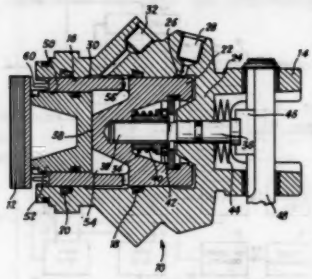
HYDRAULIC BRAKE ACTUATOR FOR A DISC BRAKE

Girauldon Jean-Claude, Ponthierry, and Leone Massimo, Clichy, both of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Mar. 3, 1972, Ser. No. 231,645
Claims priority, application France, Mar. 19, 1971, 7109738
Int. Cl. F16d *65/22*
U.S. Cl. 188—72.4 **1 Claim**

A brake actuator is disclosed which includes a housing defining a bore therewithin which slidably receives a primary piston. The primary piston defines another bore therewithin which slidably receives a secondary piston. The primary piston cooperates with the end of the bore to define a primary pres-

sure chamber and with the secondary piston to define a secondary pressure chamber. Since the area of the secondary piston is significantly smaller than the area of the primary piston ex-



posed to the fluid pressure level in the primary chamber, the secondary piston remains in engagement with the main piston unless there is a substantial pressure differential between the chambers.

3,773,149

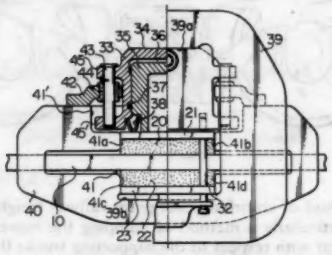
AUTOMOTIVE DISC BRAKE

Shunichi Toshida, Tokyo; Tadashi Kuroki, Yokohama; Nobutaka Someya, Tokyo; Tadashi Yano, Tokorozawa, and Takashi Ozora, Tokyo, all of Japan, assignors to Nisson Motor Company, Yokohama, Japan

Filed May 10, 1971, Ser. No. 141,487

Int. Cl. F16d *55/224*

U.S. Cl. 188—72.4 **4 Claims**



A disc brake for a hydraulic brake system of a motor vehicle is disclosed, which includes as customary a braking disc rotatable with a vehicle wheel, directly and indirectly actuated friction pad assemblies located adjacent to both sides of the braking disc and forced against the braking disc when fluid under pressure is supplied to the disc brake from a master cylinder and a yoke which is adapted to carry the pressure of the fluid to the indirectly actuated friction pad assembly, in which the improvement mainly comprises provision of means which takes a braking torque on the friction pad assemblies during operation whereby the yoke is freed of a duty of bearing the torque and permitted to serve only to carry the pressure of the working fluid to the indirectly actuated friction pad assembly, resulting in a simplified construction and a streamlined operation of the disc brake.

3,773,150

DISC BRAKES FOR VEHICLES

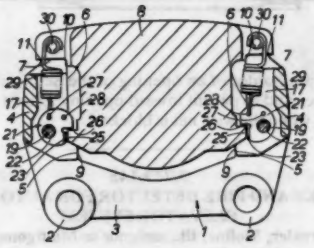
Helmut Heibel, Moschheim, Germany, assignor to Girling Limited, Birmingham, England

Filed Mar. 15, 1972, Ser. No. 234,939

Claims priority, application Great Britain, Mar. 27, 1971, 8,004/71

Int. Cl. F16d *65/00*

U.S. Cl. 188—73.5 **11 Claims**



In a vehicle disc brake of the sliding caliper member type complementary surfaces of the caliper member and of a stationary member relative to which the caliper member is slidable are urged into engagement by resilient means. The resilient means acts between the members through a lever which engages with one member and is pivotally connected to the other.

3,773,151

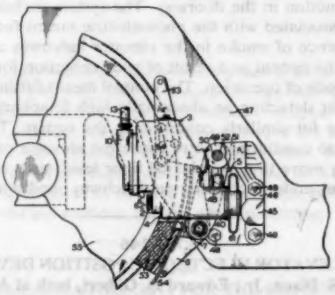
MOUNTING MEANS FOR TREAD BRAKES

Robert J. Bridigum, Pittsburgh, Pa., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

Filed Jan. 25, 1972, Ser. No. 220,590

Int. Cl. B61h *13/22*; **B60t** *13/10*

U.S. Cl. 188—153 R **10 Claims**



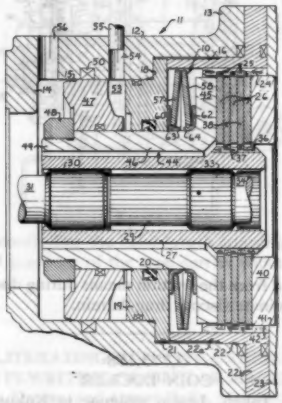
This invention relates to a tread brake unit the casing of which has formed integral therewith and at one side thereof a brake head hanger that is pivotally mounted at one end on a pin carried in the opposite jaws of a clevis that is integral with a bracket removably secured to the outboard side of an inboard-type truck side frame.

3,773,152

ENERGY STORAGE ASSEMBLY

Ellis A. Sitton, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 24, 1972, Ser. No. 237,747
Int. Cl. F16d 59/02
U.S. Cl. 188—170 4 Claims



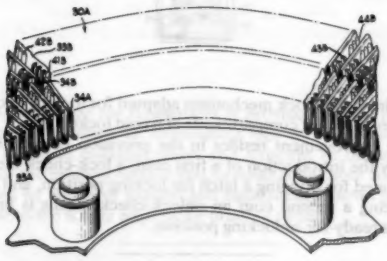
An energy storage assembly disposable between a pair of movable members includes a spring formed from sheet material normally urging the movable members apart. A wear member is interposed between the spring and the movable members to absorb wear and includes a stop portion disposed in motion limiting relation to the pair of movable members.

3,773,153

ROTOR FOR CLUTCH OR BRAKE

Richard L. Smirl, Arlington Heights, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 26, 1972, Ser. No. 220,784
Int. Cl. F16d 65/12
U.S. Cl. 188—218 XL 7 Claims



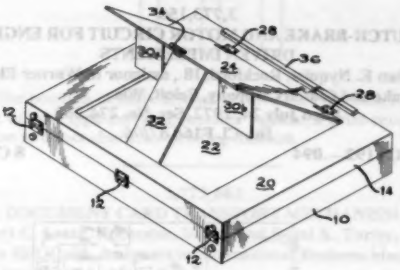
A rotor for use in disc brakes or clutches adapted to be cooled by a fluid passing between and across spaced friction surfaces which rotor includes a pair of spaced apart, annular discs joined together for conjoint rotation and a fin assembly disposed between the discs formed from a strip of relatively thin material folded to define a plurality of adjacent folds disposed in an annular configuration which fin assembly acts to promote and turbulize the flow of fluid between the annular discs and also acts in a heat exchange relationship between the annular discs and the fluid.

3,773,154

BRIEF CASE WITH TABLE PLATE FOR WRITING AND READING

Claude W. Mitchell, Suite 205, 2300 California St., San Francisco, Calif. 94102

Filed Dec. 15, 1971, Ser. No. 208,272
Int. Cl. A47b 27/02
U.S. Cl. 190—11 3 Claims



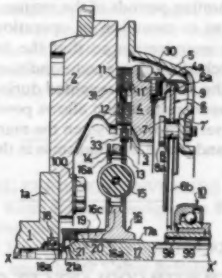
A flat rectangular brief case of rigid frame construction having a rectangular recess in one of its side walls, and hingedly supported in said recess a table plate for movement from a submerged position wherein its outer surface is substantially flush with the outer surface of the recessed side wall to a number of raised positions wherein it projects from the recess and its outer surface slopes relative to the outer surface of the recessed wall. Interposed between the underside of the table plate and the bottom surface of the recess are struts for supporting the table plate in a number of raised positions. These struts may be folded relative to the table plate or the bottom surface of the recess so that they will not obstruct return of the table plate to its submerged position within the recess.

3,773,155

VEHICLE CLUTCH RELEASE MECHANISM

Saburo Fujita; Yujiro Takikawa, and Masanori Mori, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi pref., Japan

Filed June 18, 1971, Ser. No. 154,531
Claims priority, application Japan, June 18, 1970, 45/60101; July 13, 1970, 45/69950
Int. Cl. F16d 13/50
U.S. Cl. 192—70.25 5 Claims



The invention relates to a vehicle clutch release mechanism adapted for actuation in the release stage of the clutch disc assembly so as to separate the assembly from engagement with a flywheel rotatable in unison with an input shaft, said assembly being axially shiftable and unitarily rotatable on an output shaft.

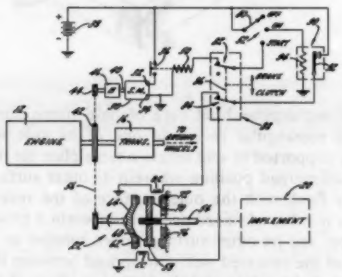
The improvement resides in the provision of resilient means preferably formed into a rubber ring or tube which is adapted for accumulating a resilient thrust energy during the engagement of said clutch disc assembly with the flywheel and for release of said accumulated thrust energy during a clutch release operation for positively and resiliently separating said assembly from contact with said flywheel.

3,773,156

CLUTCH-BRAKE AND MOTOR CIRCUIT FOR ENGINE-DRIVEN IMPLEMENTS

Stephen E. Nyquist, Rockford, Ill., assignor to Warner Electric Brake and Clutch Company, Beloit, Wis.

Filed July 24, 1972, Ser. No. 274,262
Int. Cl. F16d *67/06*
U.S. Cl. 192—.094 **8 Claims**



A control circuit for use with an electrically actuated brake and clutch mechanism through which an implement is selectively driven by an engine, the clutch and brake mechanism being characterized by having a deenergized condition in which the implement is free-wheeling and first and second energized conditions in which the implement is respectively clutched to said engine and braked to an immovable state. The control circuit includes a pair of switching devices which route energy to the clutch-and-brake mechanism from an electrical power source, one of the switching devices being in the form of a manual selector providing a choice between the first and second energized conditions of the mechanism, the other of the switching devices being controlled in accordance with the operating condition of the engine itself to (1) enable the selected one of the clutch or brake functions to occur by allowing energization of said clutch-and-brake mechanism during normal operating periods of the engine, and (2) for a short time subsequent to cessation of operation of the engine to maintain such energization so that the implement is either braked or clutched to a stopped condition. Clutching of the implement to the engine is prevented during initial start-up by an interlock mechanism which allows power to be applied to the engine starter motor only when the manual selector switch for the clutch-and-brake mechanism is in the brake position.

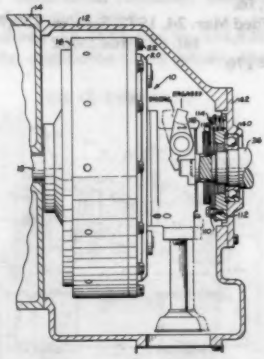
3,773,157

CLUTCH WITH COOLANT CUT-OFF VALVE

Franklin O. Koch, Jr., Edelstein, and Donald E. Lull, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 13, 1971, Ser. No. 207,450
Int. Cl. F16d *13/72*
U.S. Cl. 192—113 B **1 Claim**

A wet clutch comprising rotatable input means and rotatable output means with friction means engageable to establish a connection between the input and output means and circulating fluid to cool the friction means is provided with means to



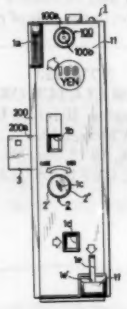
divert the fluid from the friction means during disengagement thereof to eliminate viscous drag therein.

3,773,158

COIN LOCKER

Taizo Wada, Tokyo, Japan, assignor to Kokusan Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 2, 1971, Ser. No. 168,124
Claims priority, application Japan, July 31, 1970, 45/66678
Int. Cl. G07f *17/12*
U.S. Cl. 194—32 **3 Claims**



An improved lock mechanism adapted for locking each of a number of locker compartments of a coin locker.

The improvement resides in the provision of such means that by the introduction of a first coin, a lock-check means is positioned for bringing a latch for locking position, and by introducing a second coin an unlock-check means is brought into its ready-for-unlocking position.

3,773,159

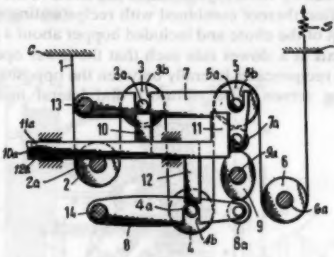
DEVICES FOR SHIFTING TYPE CARRIERS IN ELECTRIC TYPEWRITERS AND THE LIKE

Rudolf Koller, Aachen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 30, 1971, Ser. No. 129,388
Claims priority, application Germany, Apr. 21, 1970, P 20 19 222.7
Int. Cl. B41j *23/02*
U.S. Cl. 197—16 **19 Claims**

A type carrier shifting band is trained about a pair of guide rollers journalled on the carriage and between which the band

is controllably looped about a plurality of band-length adjusting rollers operatively related to levers which are relatively rockable by a motor cam. In addition, means are provided for



selectively controlling the band-length adjusting rollers to attain desired positions of the type carrier within its operating range.

3,773,160

OBLITERATING SIGN TYPE CARRIER FOR TYPEWRITING OR SIMILAR MACHINES

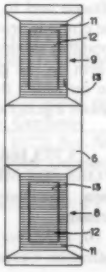
Sergio Rava, Crema, and Arturo Rolfo, Murisengo, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A, Torino, Italy

Filed Jan. 19, 1971, Ser. No. 107,714

Claims priority, application Italy, Jan. 21, 1970, 67159 A/70

Int. Cl. B41j *1/04*

U.S. Cl. 197—36 **4 Claims**



A type carrier for typewriters is provided with a printing surface for printing an obliterating sign formed of an edge zone having a constant width and adjacent to the external edge of the printing surface and an inner zone. Both zones are knurled by means of parallel and equidistant grooves perpendicular to the longer edge of the printing surface.

3,773,161

HIGH SPEED SERIAL PRINTER WITH PLURAL HAMMERS

Oscar Bossi, Milano, Italy, assignor to Honeywell Information Systems Italia, Caluso, Italy

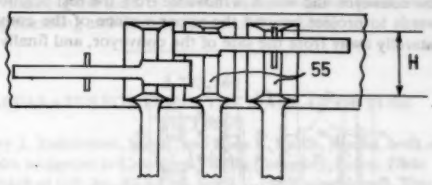
Filed Mar. 11, 1971, Ser. No. 123,277

Claims priority, application Italy, Mar. 12, 1970, 21814 A/70

Int. Cl. B41j *1/36*

U.S. Cl. 197—49 **4 Claims**

A high-speed on-the-fly serial printer, wherein a rotating type-carrying member moves along a print line past a plurality of printing positions, wherein a plurality of hammers are mounted to move with said type-carrying member, and wherein said hammers are selectively actuated in accordance



with the position of said carriage to drive the type-bearing element of said type-carrying member against a print-receiving motion to effect character printing thereon.

3,773,162

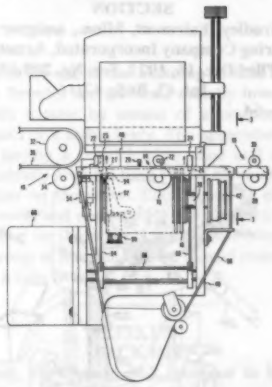
DOCUMENT CARD TRANSPORT MECHANISM

Robert C. Lentz, Rochester, Minn., and Royal K. Turley, Morgan Hill, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1971, Ser. No. 195,959

Int. Cl. B41j *13/32, 13/12*

U.S. Cl. 197—127 R **11 Claims**



Apparatus for changing the position of a document card so that it may be printed in a plurality of print positions and in a plurality of print rows including card engaging segments disposed on the ends of flexible arms, a solenoid for flexing the arms so as to increment the card forwardly, and a stepper motor for incrementally rotating the segments so as to step the card transversely.

3,773,163

KEG FEEDING CONVEYORS

Maurice Ruddick, Kent, England, assignor to Burnett & Rolfe Limited, Kent, England

Filed July 6, 1971, Ser. No. 159,926

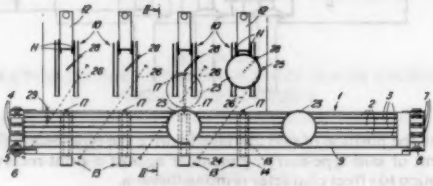
Claims priority, application Great Britain, July 15, 1970, 34386/70

Int. Cl. B65g *47/00*

U.S. Cl. 198—21 **8 Claims**

A keg processing plant having a number of processing stations positioned alongside a main keg feeding conveyor has a number of keg removing devices, one for each processing station, positioned along and beneath the conveyor and adapted to move sideways off the conveyor kegs which have an up-

standing rim at one or both of its ends. Each keg removing device comprises a finger which has a rest position at one side of the conveyor at or below the level of the upper surface of the conveyor and which is movable from the rest position upwards to project beyond the upper surface of the conveyor, laterally away from the side of the conveyor, and finally back



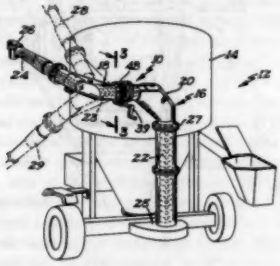
to the rest position, so that when a keg standing on a rimmed end with an edge overhanging the side of the conveyor is carried adjacent the device, upward movement of the finger engages it within the overhanging rim and outward movement pulls the keg sideways off the conveyor. The plant may be provided with mechanisms and a series of switches whereby operation of the plant is fully automatic.

3,773,164

APPARATUS FOR SWINGING A TUBULAR CONVEYOR SECTION

Richard S. Bradley, Fairmont, Minn., assignor to Art's-Way Manufacturing Company Incorporated, Armstrong, Iowa

Filed Dec. 16, 1971, Ser. No. 208,658
Int. Cl. B65g *47/16*
U.S. Cl. 198—64 **4 Claims**



A mechanical apparatus for swinging a first section of a tubular conveyor relative to a second section, the apparatus having an integral frame rigidly attached to the second conveyor section and including a cylindrical worm wheel mount and adjacent worm wheel cradle. A worm wheel rotatably mounted on the worm wheel mount and rigidly attached to a first conveyor section meshes with a worm gear rotatably mounted in the cradle in order to rotate the worm wheel in response to rotation of the worm gear by an operator, thereby swinging the first conveyor section relative to the second section.

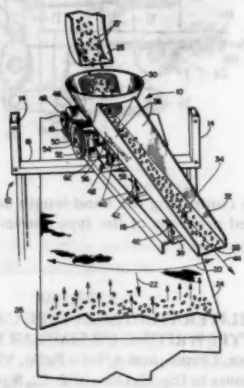
3,773,165

MACARONI DISTRIBUTOR SHAKER

Wilbert E. Tolles, Minneapolis, Minn., assignor to The Creamette Company, Minneapolis, Minn.

Filed Aug. 17, 1971, Ser. No. 172,467
Int. Cl. B65g *21/.2*
U.S. Cl. 198—112 **8 Claims**

A macaroni distributor shaker is disclosed in which short cut macaroni, noodles or other alimentary paste particles in partially dried form are received within a hopper of partial cone shape at the top of the shaker and thereafter advanced along the length of an elongated chute extending from one side of the hopper to a lower open end of the chute for distribution over a moving drying screen therebelow. The macaroni particles are uniformly and evenly distributed on the drying screen by vibratory motion of the chute in the direction of elongation thereof combined with reciprocating rotational movement of the chute and included hopper about a generally vertical axis at a slower rate such that the lower open end of the chute reciprocates laterally between the opposite edges of he drying screen. The vibratory and lateral motions are



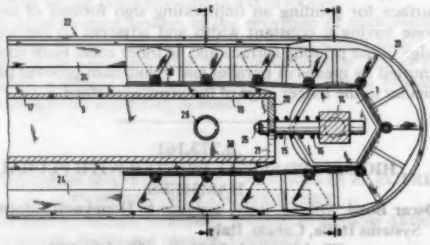
generated from a single drive motor coupled to drive a rotatable shaft including an eccentric bearing and a gear reduction mechanism. The vibratory motion results from a connecting rod coupled between the eccentric bearing and the chute which is mounted to a base frame for longitudinal movement relative thereto by a plurality of elongated elements pivotably mounted to the base frame and to the chute. Reciprocating rotational motion of the chute is provided by a rotary cranking mechanism which is rotatably mounted on the base frame and coupled to a rotating arm on the gear reduction mechanism and to a support frame on which the base frame is pivotably mounted for rotation about a generally vertical axis.

3,773,166

CONVEYORS FOR METAL CLIPS

Eduard Nowacki, Essen, Germany, assignor to May-Fran G.m.b.H., Essen, Germany

Filed Jan. 10, 1972, Ser. No. 216,584
Claims priority, application Germany, Jan. 11, 1971, P 21 00 932.5
Int. Cl. B65g *15/30*
U.S. Cl. 198—196 **6 Claims**



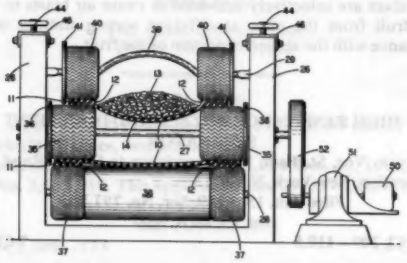
A conveyor more particularly for metal chips comprises a hinged belt made up of individual plates. The hinged belt is guided around polygonal wheels, against the peripheral faces of which bear the plates whilst being guided, one of the polygonal wheels being arranged to act as the drive wheel. No lateral chains are provided since such are not required.

3,773,167

CONVEYOR BELT MULTIPLE DRIVE SYSTEM

Hebert E. McGinnis, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 171,850
Int. Cl. B65g *23/10*
U.S. Cl. 198—203 18 Claims



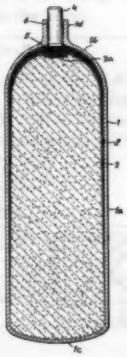
A troughed conveyor belt of the type having nearly inextensible longitudinal reinforcements in its flat margins is used for long uninterrupted transport of bulk material, or for high lifts, by providing multiple drives along its length. Each of the multiple drives engages both the load-carrying strand and the return strand of the belt by means of a pair of driven tires between the marginal portions of the two belt strands and other pairs of tires pressing the belt against the driven tires. To assure proper division of work among the individual drive motors, they are identical in operating characteristics, and are selected to have a percentage of reduction in speed as the load is increased from no load to full load at least several times as great as the percentage of stretch in the longitudinal reinforcements of the belts.

3,773,168

PRESSURIZED-GAS VESSEL AND METHOD OF MAKING SAME

Helmut Meinass, Pullach, Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Mar. 1, 1972, Ser. No. 230,580
Claims priority, application Germany, Mar. 8, 1971, P 21 11 10 25.8
Int. Cl. B65d *25/00*; F17c *11/00*
U.S. Cl. 206—0.7 10 Claims



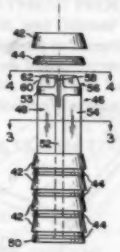
A pressurized-gas vessel, especially for acetylene and gases soluble in a solvent, which comprises a pressure-retentive metal container, a body of porous material within the container and spaced from a wall thereof to form an intervening space, and a mass of sintered material filling this space and constituting a flame barrier and shock-wave attenuator to prevent explosion of the gas within the vessel while mechanically retaining the mass of porous material against breakdown during handling and transportation of the vessel.

3,773,169

APPARATUS FOR USE IN THE MAKE-UP OF TUBE FITTINGS

Emery J. Zahuranec, Solon, and Ross E. Barth, Euclid, both of Ohio, assignors to Crawford Fitting Company, Solon, Ohio

Division of Ser. No. 812,118, April 1, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,457
Int. Cl. B65d *85/00*
U.S. Cl. 206—46 H 7 Claims



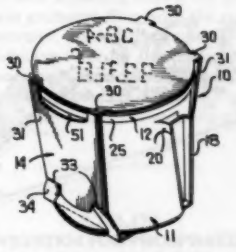
An apparatus for use in the make-up of tube fittings of the type wherein ferrules are cammed radially inwardly into engagement with a tube by means of a coupling nut and a camming mouth of a fitting body. The apparatus is comprised of an arbor having a constrictable head and a plurality of groups of generally annular tube fitting elements arranged in coaxial relation on the arbor. Each group of elements comprises two diverse and cooperating ferrules arranged in a particular sequence on the arbor. Upon constricting the head of the arbor a group of ferrules may be passed over the head and assembled in a tube fitting.

3,773,170

PACKAGE

Harry J. Rossi, Parsippany, N.J., assignor to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Feb. 5, 1971, Ser. No. 112,877
Int. Cl. B65d *85/54*, *5/02*, *65/06*
U.S. Cl. 206—46 R 1 Claim



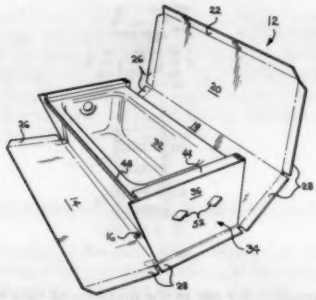
This disclosure relates to a package which includes a separately utilizable container having a product therein to be dispensed and wherein a removable and replaceable cover is placed on the container to close the same until the contents thereof have been dispensed. The package is completed by a

wrap-around jacket which interlocks with both the container and the cover and which firmly retains the cover in place against tampering whereby the package may be readily displayed on shelves for sale. Another feature of the package is that no product identification must be applied to the container in that such product identification may be readily applied to the jacket. A further feature is that the jacket prevents any undesirable accumulation of dust on the cover.

3,773,171
CORRUGATED BATHTUB PACKAGE

Robert N. Edsall, Saline, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed May 19, 1972, Ser. No. 255,148
Int. Cl. B65d *85/00, 5/46, 13/00*
U.S. Cl. 206—46 H **1 Claim**

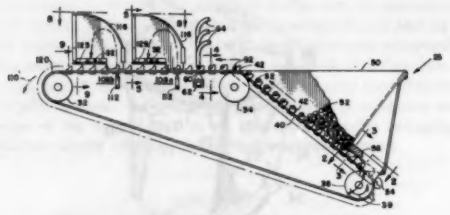


A shipping container for a bulky item, such as a bathtub or the like, which is formed entirely from corrugated paperboard material. A wrap-around body portion is provided in combination with a pair of corrugated end closures which incorporate build-up blocks to suspend the bathtub within the body portion and close the ends of the body portion to completely enclose the bathtub for shipping.

3,773,172
BLUEBERRY SORTER

William Fred McClure, and Roger Phillip Rohrbach, both of Raleigh, N.C., assignors to Research Corporation, New York, N.Y.

Filed Mar. 21, 1972, Ser. No. 236,613
Int. Cl. B07c *5/342*
U.S. Cl. 209—73 **19 Claims**

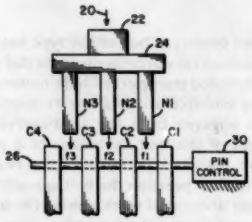


An automatic sorting apparatus for objects, such as fruit, has a plurality of individual cups arranged in a spaced array on a conveyor means to singularly receive and carry fruit from a feeding station to an optical reading station where light from a source of illumination under the conveyor means passes through bottom apertures in the cups to be diffused by the carried fruit with the scattered light being captured by fiber optic means disposed at an angle other than 180° with respect to the source of illumination. Optical means coupled to the fiber optic means generates electrical signals proportional to the transmittance of the fruit at a plurality of selected wavelengths and electronic means is activated by such transmittance related signals to generate sorting signals which indicate the condition of the carried fruit. A logic network interprets such signals and respondingly actuates an ejection system wherein air valves are selectively activated to cause air blasts to eject the fruit from the cups at different sorting stations in accordance with the sensed condition of the fruit.

3,773,173
HIGH RESISTANCE NOZZLE AND DOCUMENT SEPARATOR

Leroy A. Vos, St. Paul, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,263
Int. Cl. B07c *9/00*
U.S. Cl. 209—110.5 **7 Claims**

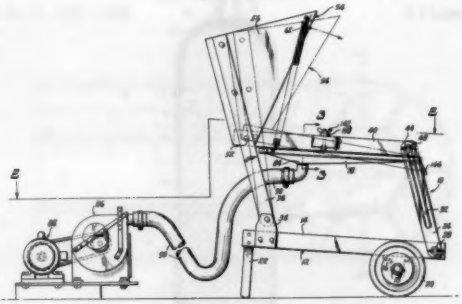


A nozzle having a throat resistance calculated to be sufficiently high to render fluid flow therethrough substantially constant irrespective of changes in external resistance to such fluid flow is described. The high resistance nozzle is shown as used in a document handling apparatus for separating adjacent documents. A plurality of high resistance nozzles is shown operated from a common fluid pressure source for maintaining a plurality of documents in a spaced-apart relationship.

3,773,174
ELECTROSTATIC PROCESSOR FOR ORES

Thomas Stimpel, 3943 Valley Vista Dr., Camino, Calif.

Filed Oct. 20, 1971, Ser. No. 190,987
Int. Cl. B03c *3/13*
U.S. Cl. 209—131 **1 Claim**



An ore processor for separation of metal values from sand and pulverized matter such as found in ores and the like in which a tray has a core with a series of compound openings to admit pressurized air therethrough from an air supply source. Multiple layers of air permeable fabric overly the core on the

side thereof opposite from the air input, and transverse rods extend across the layers of fabric at spaced intervals. Air passing through the core and fabric results in agitation of ore placed on the tray and results further in the creation of an electrostatic charge on the cloth which serves to attract metal values.

ERRATUM

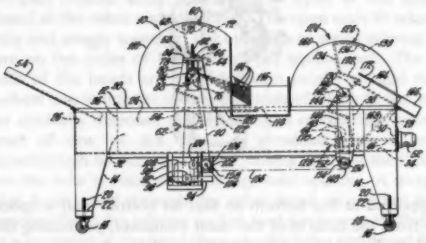
For Class 209—73 see:
Patent No. 3,773,172

3,773,175

APPARATUS FOR GRADING PIECES OF MEAT

Charles H. Wallace, Smithfield, Va.

Continuation-in-part of Ser. No. 886,826, Dec. 22, 1969, Pat. No. 3,653,918. This application Jan. 29, 1971, Ser. No. 110,926
Int. Cl. B03b *3/38*
U.S. Cl. 209—173 3 Claims



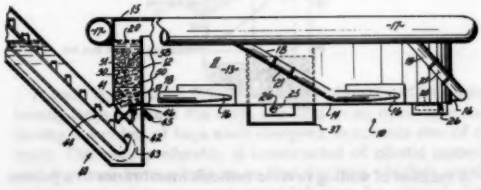
Apparatus is provided for grading or sorting relatively fat and relatively lean hams or other pieces of meat. The hams are placed in a trough through which flows brine of a predetermined density, in which the fatter hams tend to float or seek an upper level in the brine and the leaner ones tend to sink or seek a lower level. Those hams near the surface of the brine in the trough are sold with minimum or no trimming while those near the bottom are de-boned and the fat is removed, with these hams being sold at a premium price. In the particular apparatus, the hams move along the trough containing the brine which is supplied at one end, recirculated when reaching the other end. A plurality of rotatable fingers are mounted at an intermediate portion of the trough to engage and remove hams at an upper level in the brine. Rotatable fingers are also located at the other end of the trough to engage and remove hams at the lower level in the brine.

3,773,176

SEPARATING APPARATUS AND METHOD

James W. Loughner, Rt. 1, Box 456, Litton Heights, W. Va.

Filed Mar. 27, 1972, Ser. No. 238,038
Int. Cl. B03b *3/00*
U.S. Cl. 209—459 18 Claims



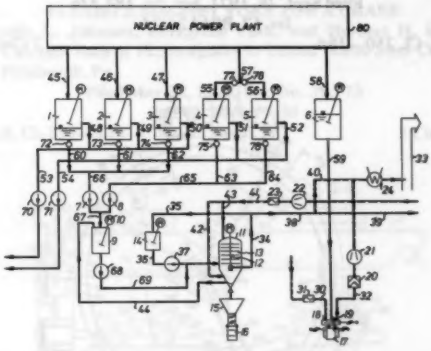
This apparatus for separating a mixture of solid particulate materials of different densities includes an annular vessel with tangentially entering liquid stream injection ports adjacent the bottom of the vessel. The liquid streams entering the vessel under pressure through these ports circulate the mixture and, by reason of different horizontal fluid velocities across the vertical cross-section of the vessel, separate it into fractions according to density. The more dense fraction is removed through the vessel's bottom, while the less dense fraction is removed throug a weir in the sidewall of the vessel. A throat above the inlet ports reduces the velocity of the upper part of the circulating mixture and improves classification. Additionally, the injection of small high velocity upward streams of liquid through inlet ports in the vessel's bottom tumbles or jigs the heavy fraction, and releases lighter fractions entrained therewith. Water or so-called heavy media can be used as the separating liquid.

3,773,177

TREATMENT PROCESS

Horst Queiser, Hochstadt, and Othmar Meichsner, Raunheim, both of Germany, assignors to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Filed Feb. 26, 1971, Ser. No. 119,339
Claims priority, application Germany, July 20, 1970, P 20 35 925.5
Int. Cl. B01d *37/02*
U.S. Cl. 210—68 7 Claims



Given a group of radioactive concentrates including a concentrate from a resin-bead ion exchange filter, a concentrate from an evaporation concentrator, and a concentrate from another concentrator yielding a concentrate having a salt content lower than that of the concentrate from the evaporation concentrator and particles smaller than the particle size of the resin beads; a process including mixing the concentrate from the resin-bead ion exchange filter with the concentrate from the other concentrator, passing the resulting mixture through a filter-cake-producing filter for dewatering and drying, and skirting the concentrates from the evaporation concentrator around the filter-cake-producing filter and directly into transport and storage vessels for their dewatering in such vessels.

3,773,178

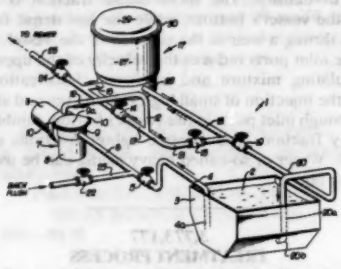
FILTRATION SYSTEM FOR PHOSPHATIZING BATHS

Marshall Richard Bland, Long Beach, Calif., assignor to Purex Corporation, Limited, Lakewood, Calif.

Division of Ser. No. 778,119, Nov. 22, 1968, abandoned. This application Mar. 8, 1971, Ser. No. 122,216
Int. Cl. B01d *35/16*
U.S. Cl. 210—136 4 Claims

Sludge removal from chemical treating baths such as phosphating baths is effected in an improved manner by

passing a sludge containing portion of the bath through a flow reversible filter in pressure communication with a pump for



separation of sludge as a compressed mass and return of virtually all the solution as sludge-free filtrate to the bath.

3,773,179

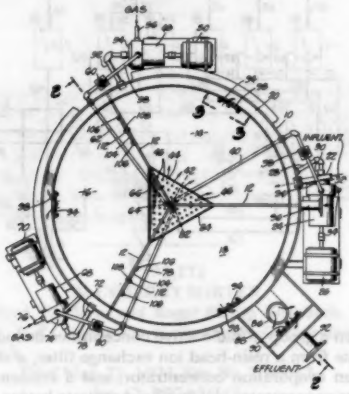
APPARATUS FOR TREATING WASTE FLUIDS BY MEANS OF DISSOLVED GASES

George E. Hurst, South Gate, Calif., assignor to Pollution Control Engineering, Inc., Downey, Calif.

Filed Sept. 28, 1971, Ser. No. 184,336

Int. Cl. B01d *21/24*

U.S. Cl. 210—194 **7 Claims**



Apparatus for treating waste water and the like to remove suspended pollutants therefrom comprising a tank having a plurality of compartments wherein the fluid is repeatedly pumped from one compartment to the next. At each pumping station, gas is injected at the suction side of the pump and back pressure is maintained in the discharge line to force more gas into solution. Effluent from each compartment is taken near the bottom and the discharge is located midway of the height, confined to a small area and then deflected by a deflector plate. Clarified water is removed by a riser tube from the bottom of the final compartment and flows over a weir. The floated matter is removed from the fluid surfaces in each compartment by skimming or other known methods.

3,773,180

OIL FILTER HOUSING ASSEMBLY

Dan K. Harrison, 15140 Vase St., Van Nuys, Calif.

Filed Apr. 10, 1972, Ser. No. 242,500

Int. Cl. B01d *27/08, 29/24*

U.S. Cl. 210—315 **10 Claims**

A filter housing assembly for the filtering of oil in automobile engines and the like which can be connected directly to the engine block of most models of engines without special adapters or additional plumbing by virtue of the provision of a non-concentric mounting configuration for the mounting plate. The exterior housing receives an inner liner consisting of an ordinary No. 2 ½ tin can, which in turn contains any type of low cost filtering media, such as toilet tissue. The inner liner

is supported at the bottom so that its bottom wall is spaced away from the bottom of the outer container, permitting flexing of the inner container if pressure changes occur, and the inner liner traps the sludge so that the filter can be changed without having to clean the outer container. Parallel flow is achieved in the filter media for greater efficiency.

3,773,181

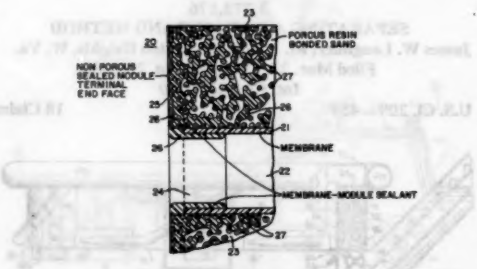
SEALING MEMBRANES IN A REVERSE OSMOSIS MODULE

Andrew S. Calderwood, Monroeville, Pa., and Richard G. Black, Boulder, Colo., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 8, 1971, Ser. No. 160,593

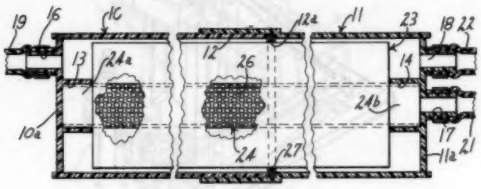
Int. Cl. B01d *31/00*

U.S. Cl. 210—321 **13 Claims**



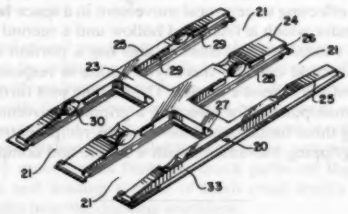
A method of sealing reverse osmosis membranes to a porous support comprises applying a sealant composition, comprising diepoxide resin and amidopolyamine, to the membrane and support in an atmosphere having a relative humidity over 85 percent, said sealant contacting both the membrane and the support.

3,773,182
CASE FOR FLUID FILTER CARTRIDGE
Josh B. Jones, Helena, Ala.
. Filed Oct. 14, 1971, Ser. No. 189,165
Int. Cl. B01d *13/00*
U.S. Cl. 210—321 1 Claim



A filter case for a fluid filter cartridge which comprises a two-part tubular body. Each tube is open at one end and closed at the other end by a head. The open ends fit telescopically and snugly together, tight enough to stand internal pressure on the order of 100 pounds per square inch. The inner walls of the heads are provided with axially alinged tubular sockets into which the inner open ends of which fit the ends of the centrally disposed perforated tube of the filter unit. The head of one of the tubes is provided with a passage therethrough so that clean fluid passing through the filter and into the tube is discharged through said opening. A dirty fluid inlet is provided through the other head, at a point therein removed from the tubular socket, and a concentrate fluid outlet is provided in the head through which the unfiltered fluid in case is discharged.

3,773,183
RACK FOR BIOLOGICAL TESTING TRAYS
Stanley R. Johnson, Fountain Valley, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed Dec. 13, 1971, Ser. No. 207,091
Int. Cl. A47g *29/00*
U.S. Cl. 211—71 3 Claims

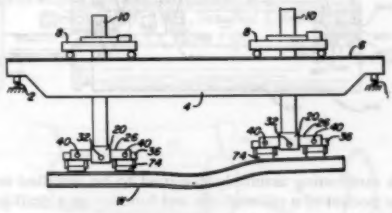


A rack is disclosed for containing a plurality of biological testing trays wherein the trays are held in an open type rack having a number of bays each designed to contain one of the trays. The rack preferably is constructed of plastic material and does not have a bottom so that the tray which is usually constructed of transparent material may be viewed from either side. The trays are held in the rack by a combination of a relatively small shelf around the bay and by the side walls, either only by frictional engagement or by protrusions.

3,773,184
HANGER BAR FOR SHIPPING GARMENTS AND THE LIKE
Francis P. Brennan, 1057 Rolling Drive, Lisle, Ill.
Filed Mar. 3, 1972, Ser. No. 231,499
Int. Cl. A47k *10/04*
U.S. Cl. 211—123 4 Claims

Hanger bar for shipping garments, made from a single piece of light gauge sheet metal having a main inverted channel forming a support for a plurality of garment hangers and having end hangers formed integrally with said main channel adapted to hook on the top edges of opposite side walls of a shipping container for the garments. The bar is reinforced by gussets at the end shoulders and ribs embossed in the top surface of the bar to give the bar the strength to carry relatively heavy loads and to enable it to be made from a single piece of light gauge sheet metal.

3,773,185
FLEXIBLE MAGNET YOKE FOR A CRANE
Archie L. Johnson, Evergreen Park, and Herbert H. Post, Chicago, both of Ill., assignors to United States Steel Corp., Pittsburgh, Pa.
Filed May 22, 1970, Ser. No. 39,773
Int. Cl. B66c *19/00*
U.S. Cl. 212—129 2 Claims

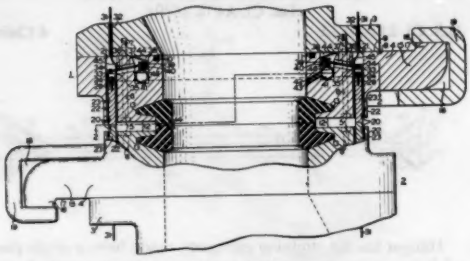


A crane having a pair of trolleys supported on its bridge and a mast dependent from each trolley has a support pivotally mounted on the mast for movement about a horizontal axis. A suspension bar is pivotally mounted on each end of the support for movement about an axis parallel to the support axis. A magnet is suspended from each of the suspension bars by means of a resilient support at each end of the bar. Thus, when an elongated object is picked up by the four magnets good contact is made by all four magnets.

3,773,186
AIR HOSE COUPLING WITH ELECTRICAL CONNECTOR
William H. Reno, Monroeville, Pa., and Fred Temple, Pittsburgh, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed Mar. 20, 1972, Ser. No. 236,369
Int. Cl. B61g *5/06*
U.S. Cl. 213—1.3 16 Claims

This invention relates to an air hose coupling for use on railway cars. This hose coupling has embodied therein a snap-acting mechanism operated cojointly by a Belleville spring and an inflatable tube member inflated by the fluid under pressure passing through a pair of coupled hose couplings for

reciprocating a plurality of electrical contact members within corresponding bores extending inward from the face of each respective hose coupling so that the contact members carried



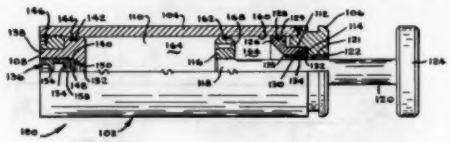
by each respective hose coupling quickly make and break contact with the corresponding contact members carried by the other hose coupling thereby eliminating arcing and burning of these contacts thus considerably lengthening their useful life.

3,773,187

CUSHIONING ASSEMBLY

Robert L. Carlson, Chicago, Ill., assignor to Miner Enterprises, Inc., Chicago, Ill.

Filed Apr. 26, 1972, Ser. No. 247,594
Int. Cl. B61g *9/08*
U.S. Cl. 213—43 **8 Claims**



A cushioning assembly designed to be installed in a draft gear pocket of a railroad car and function as a draft gear. The cushioning assembly has an elongated housing with one closed end wall and a plurality of cylindrical passageways extending lengthwise from the closed end wall. A damped spring unit is slidingly mounted in each of the cylindrical openings with its piston in abutting engagement with the closed end wall. The other end of the damped spring units project outwardly of the housing and are in abutting engagement with a force transfer member extending crosswise to the axis of the cylindrical housing.

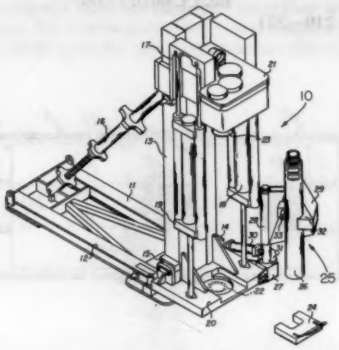
3,773,188

GRIPPER FOR A DRILL ROD HANDLING APPARATUS

Thomas Lonnie Arrington, Beaumont, Tex.

Filed Mar. 20, 1972, Ser. No. 236,002
Int. Cl. E21b *19/14*
U.S. Cl. 214—1 P **12 Claims**

An improved gripper insures that the addition or removal of individual drill rods from the drill column of an earth boring machine will be carried out in a safe and expedient manner. A drill rod handling apparatus including an arm means is positioned to move individual drill rods into and out of the uppermost position in the drill column of the drilling system. An improved gripper is connected to the arm means and adapted to grasp and retain an individual drill rod as it is being moved into and out of the drill column. The gripper includes a fixed gripping means connected to the arm means for receiving the drill rod and a slidable gripping means slidable relatively to the fixed gripping means for cooperating with the fixed gripping means to retain the drill rod. The slidable gripping means in-



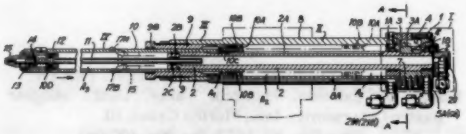
cludes a tapered surface for contacting the drill rod and the taper angle of the tapered surface is within the range of 7.5° to 45°.

3,773,189

PNEUMATICALLY POWERED LOADING UNIT FOR USE WITH AN INDUSTRIAL ROBOT

Yoshiaki Kitamura, 607 Hatsutomi, Kanagaya-machi, Higashi-Kalsushika-gun, Chiba-ken, and Shigemi Misono, 3-6-8 kenuto, Setagaya-ku, Tokyo, both of Japan

Filed Oct. 12, 1972, Ser. No. 296,905
Int. Cl. B66c *1/44*
U.S. Cl. 214—1 BB **10 Claims**



A pneumatically-powered loading unit for use with an industrial robot comprises a transfer arm driven pneumatically for effecting a reciprocal movement in a space between a first cylinder which is fixed and hollow and a second cylinder which is rotatable. The transfer arm has a portion engaging with the second cylinder thereby to rotate in response to the rotation of the second cylinder. The loading unit further comprises a manipulator for effecting a gripping movement, thus providing three fundamental movements, reciprocating, rotating and gripping movements with a simple and compact construction.

3,773,190

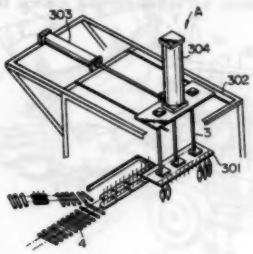
APPARATUS FOR INSPECTING AND HANDLING YARN PACKAGES

Kinyu Ishida, and Eiji Minaka, both of Matsuyama, Japan, assignors to Teijin Ltd., Osaka, Japan

Filed Feb. 4, 1972, Ser. No. 223,683
Claims priority, application Japan, Apr. 8, 1971, 46/21967; Apr. 10, 1971, 46/27139
Int. Cl. B65g *25/00*
U.S. Cl. 214—16 B **4 Claims**

The present invention relates to apparatus for inspecting and handling packages whereby packages such as pirns and

bobbins are rotatably placed on pallets for holding packages, and the pallets are conveyed with a roller conveyor such that the packages are caused to rotate automatically for visual inspection; the packages thus automatically inspected are extracted from the pallets and fed into a packing machine and at the same time, emptied pallets are recovered with a recovery conveyor line; and cyclic loading and discharging of packages are repeated.

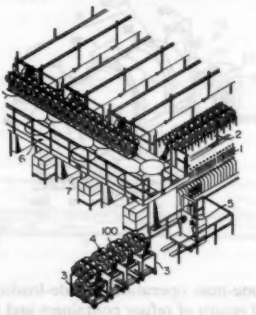


3,773,191

METHOD OF AND APPARATUS FOR ARRANGING CREELS OF DRAWING MACHINES

Kinyu Ishida, Matsuyama, Japan, assignor to Teijin Limited, Osaka, Japan

Filed Nov. 30, 1971, Ser. No. 203,312
Int. Cl. B65h *54/26*
U.S. Cl. 214—16.1 R **13 Claims**



Method of and apparatus for arranging the creels of drawing machines by replacing empty bobbins on the creel with full bobbins of undrawn yarn by accommodating creel trucks loaded with full bobbins on a stand-by platform connected with the ends of truck paths over a number of drawing machines installed in parallel to each other, removing a train of empty creel trucks from the truck paths on the drawing machine and leading a train of fresh creel trucks onto the truck paths over the drawing machines.

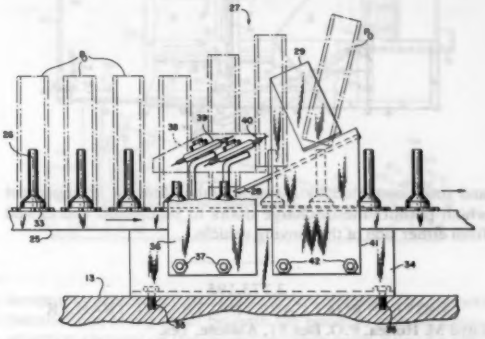
3,773,192

PARISON OVEN WITH IMPROVED PARISON REMOVAL STRUCTURE

Lawrence A. Moore, Rockford, Ill., and Gordon R. Voll, Beloit, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Nov. 6, 1972, Ser. No. 304,057
Int. Cl. B65g *47/34*
U.S. Cl. 214—21 **20 Claims**

An oven for heating parisons including a carrying structure for supporting the parisons and carrying them along a path through the oven and a removal structure for separating the parisons from the carrying structure for removal from the oven. A lifting structure includes an upwardly inclined sharp edge which one or both sides of the parisons engage under pressure as they move through the removal structure, causing the parisons to ride upwardly onto an upwardly inclined track structure for separation from the carrying structure, which structure continues to move horizontally past the track structure. The sharp edge may be one or more disc blades, preferably toothed, including sharp edges in the form of parallel upwardly inclined sharp ridges.

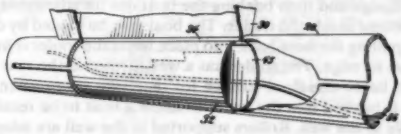


3,773,193

INCINERATOR LOADING DEVICE

Kenneth R. McClure, Andover, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Apr. 21, 1971, Ser. No. 136,081
Int. Cl. F23k *3/00*
U.S. Cl. 214—31 **3 Claims**



A loading device for an incinerator whereby miscellaneous combustibles are moved effectively into a closed incinerator housing in a manner that precludes the simultaneous leakage of air. The loading device utilizes an inner carrier tube including sealing means slidably mounted within an outer sleeve which communicates with a loading opening in the housing of an incinerator. Combustibles are loaded into the carrier tube and then simultaneously moved laterally and rotated so that the contents thereof are dumped into the incinerator.

3,773,194

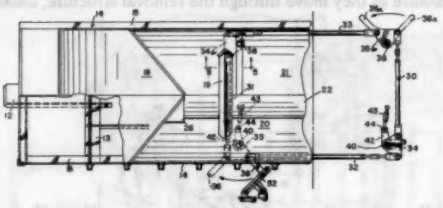
DISCHARGE DOOR OPERATING MECHANISM

James J. Schuller, Crete, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed July 27, 1972, Ser. No. 275,849
Int. Cl. B61d *7/30*
U.S. Cl. 214—63 **10 Claims**

A hopper door opening and closing device for use on pivoted discharge doors and including a strut connected directly to the pivoted door and having an end connected arm and rotating shaft member. The shaft has an attached bell crank with a portion which extends outside the car and is actuated by a trackside tripping device to rotate the shaft and

thereby open and close the discharge door. A pair of rotating shafts and associated door connecting members are utilized



and interconnected by a four-member linkage arrangement which permits the discharge doors to be opened and closed from either side of the moving vehicle.

3,773,195

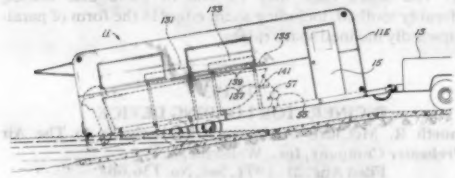
DRIVE IN BOAT CARRYING TRAVEL TRAILER

Loyd M. Honea, P.O. Box 81, Abilene, Tex.

Continuation-in-part of Ser. No. 49,730, June 25, 1970, abandoned. This application Nov. 12, 1971, Ser. No. 198,143

Int. Cl. B60p *3/10, 3/32*

U.S. Cl. 214—84 **9 Claims**



The specification discloses a trailer that serves both as a camping trailer and as a boat trailer and which allows a boat to be launched by simply backing the trailer down into the water's edge and then backing the boat out on adjustable rollers secured inside the trailer. The boat may be loaded by driving or pulling the boat back into place while the trailer is in the water at its edge. The trailer has a well formed in the rear end thereof below the floor surface for receiving water when the trailer is backed into the water to allow a boat to be received partially in the well. Rollers supported in the well are adapted to be moved to operative positions above the level of the floor surface for supporting a boat and to inoperative positions in the well below the level of the floor surface when the boat has been launched from the trailer. Removable floor sections are provided for covering the well when the rollers are moved to their inoperative positions and after the boat has been launched whereby complete use of the trailer may be used for camping or living purposes.

3,773,196

BOTTOM DUMPING BUCKET

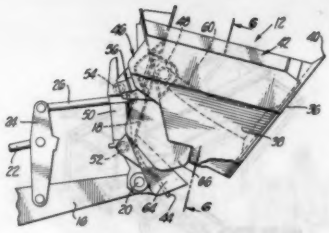
Willard W. Shepherd, Whittier, Calif., assignor to Shepherd Machinery Co., City of Industry, Calif.

Filed Apr. 24, 1970, Ser. No. 31,669

Int. Cl. E02f *3/81*

U.S. Cl. 214—146 R **2 Claims**

A bottom dumping bucket for a bucket loader. The bucket, considered in its upright position, is downwardly convergent both longitudinally and laterally to provide it with a hopper-like configuration. The front wall and the end walls of the hopper-like receptacle constitute a moveable front section which is pivotable relative to the rear wall about a lateral axis adjacent the top of the rear wall to close and open the bottom of the receptacle. Overlapping end plates on the rear wall and the moveable front section maintain the ends of the receptacle substantially closed even when the discharge opening at the bottom thereof is open.



With the foregoing construction, a bucket having a large capacity and a comparatively small discharge opening is provided, thereby permitting metered dumping of material from the bucket.

3,773,197

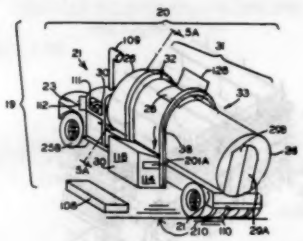
REFUSE CONTAINER LOADING AND TRANSPORT SYSTEM AND APPARATUSES THEREFOR

Clyde A. Blakeley, and Joe M. Morgan, both of Lubbock, Tex., assignors to Fabit Corporation, Lubbock, Tex.

Filed Nov. 20, 1972, Ser. No. 308,157

Int. Cl. B65f *3/02*

U.S. Cl. 214—302 **3 Claims**



A system for one-man operation of side-loading elevating and emptying and return of refuse containers and transport of the contents thereof: A laterally extensible container engaging and loading mechanism is manipulated by an operator to engage and lift a container adapted for such manipulation.

3,773,198

VEHICLE AMBULANCE

Bissett J. Roberts, P.O. Box 351, Waynesboro, Pa.

Continuation of Ser. No. 69,779, Sept. 4, 1970, Pat. No. 3,674,167. This application June 14, 1972, Ser. No. 262,525The portion of the term of this patent subsequent to July 4, 1989, has been disclaimed.

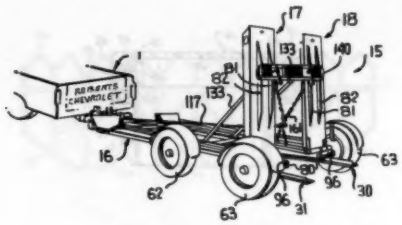
Int. Cl. B60p *3/12*

U.S. Cl. 214—505 **23 Claims**

This disclosure relates to a vehicle ambulance adapted to receive and transport disabled vehicles, i.e., automobiles, trucks, etc., and includes a main support having a rear end portion to which is pivotally mounted a pair of laterally spaced platform members, each of the platform members carrying on an underside thereof follower means, and a guide frame carrying a pair of actuators associated with each follower for moving the platform members between an outwardly and

downwardly inclined first position relative to the main support and an outwardly and generally parallel second position relative to the main support.

The vehicle ambulance further includes means for supporting the platform members in a third generally upright vertical position, and means are provided for mounting a light assembly to the platform members in both the first and third positions thereof. The actuator means are moved in unison by means of an extensible-retractable fluid motor with the latter being articulately mounted between the main vehicle support and the laterally supported guide frame carrying the actuator means.

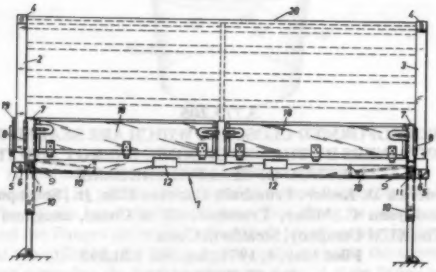


3,773,199

REMOVABLY SUPPORTED LORRY PLATFORM

Carl-Eric Arvidsson, Laholm, Sweden, assignor to Lagaholm AB, Laholm, Sweden

Filed Jan. 24, 1972, Ser. No. 220,305
Claims priority, application Sweden, Jan. 25, 1971, 788/71
Int. Cl. B60p *1/64*
U.S. Cl. 214—515 3 Claims



A load-receiving platform with means enabling it to be supported on for instance lorries, railway-carriages, and ships, and removably secured thereto during transport, and with legs supporting the platform during loading, said legs being arranged for displacement upwards during transport and being supported on holders, having means to permit said holders to be moved aside to increase the lateral distance between said support legs.

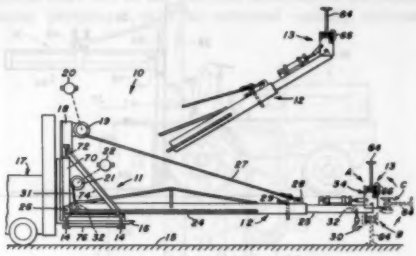
3,773,200

APPARATUS FOR ELEVATING CONSTRUCTION ELEMENTS

Hallie E. Morris, R.D. 6 Box 240A, Washington, Pa.

Division of Ser. No. 47,242, June 18, 1970, abandoned. This application May 25, 1972, Ser. No. 256,724
Int. Cl. B66f *9/00*
U.S. Cl. 214—620 4 Claims

Apparatus for raising and lowering construction elements has a base on which there is means for raising and lowering a boom that is pivoted to the base. The base is provided with openings for receiving the forks of a fork lift truck so that the apparatus can be lifted and carried about. Pivoted to the outer end of the boom on a transverse axis is a support member for temporary attachment to a construction element. The support member can swing down beneath the boom to pick up a construction element on the ground and then swing it up to a position above the boom.

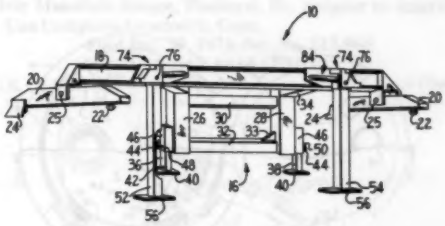


3,773,201

SELF-STORING MATERIAL HANDLING ATTACHMENT FOR LIFT TRUCKS

Norman D. Thompson; Charles R. Chelin, both of Dallas, Oreg., and Lawrence A. Liljequist, Salem, all of Oreg., assignors to Towmotor Corporation, Cleveland, Ohio

Filed Dec. 23, 1971, Ser. No. 211,393
Int. Cl. B66f *9/00, 13/00*
U.S. Cl. 214—621 6 Claims



A self-storing material handling attachment having a material engaging device including a frame for removably mounting the same on a transport vehicle, including a plurality of support legs borne by the frame for movement relative to the frame between a retracted position permitting unrestricted operation of the vehicle and an extended position for supporting and storing the attachment independently of the vehicle.

3,773,202

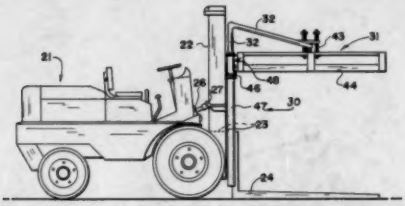
ADJUSTABLE LOAD STABILIZER FRAME FOR FORKLIFT TRUCK AND METHOD

Joseph G. Dutra, Jr., 4568 Thornton Ave., Fremont, Calif.

Filed Aug. 28, 1972, Ser. No. 284,334
Int. Cl. B66f *9/18*
U.S. Cl. 214—654 7 Claims

An adjustable frame for a load stabilizer mounted in vertically spaced and substantially superimposed relation over fork means on a forklift truck is disclosed. The frame includes a reciprocating extension means mounted to the forklift carriage and a reciprocating stabilizer carrying frame portion, preferably telescopically mounted with respect to the extension means. A locking sleeve formed to allow selective locking

to both or one of the extension means and stabilizer frame is also provided for adjustment of the range heights through which the stabilizer may be positioned. A method, which can



be performed by a single forklift operator, of adjusting the stabilizer by alternately utilizing the stabilizer driving means and the carriage on which the stabilizer is mounted to support the weight of the stabilizer is also disclosed.

3,773,203

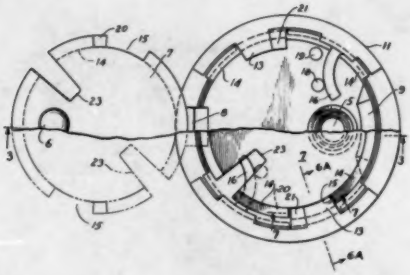
CLOSURES FOR BOTTLES AND THE LIKE

Anthony J. Grimaldi, Scotch Plains; Nicholas W. Kachur, Clark, and Anthony F. Tomburo, Union, all of N.J., assignors to Gilison Associates Incorporated, Cranford, N.J.

Filed Jan. 20, 1972, Ser. No. 219,269

Int. Cl. B65d *55/00*

U.S. Cl. 215—9 **3 Claims**



A closure for bottles, cans and like containers which is difficult for small children to open comprises a stationary member adapted to be mounted upon the neck of the container, said member having a dispensing aperture communicating with the passage through the container neck, and comprising a locking ring mounted on and rotatable with respect to said stationary member. Said stationary member includes a hinged lid provided with a stopper adapted to close and seal said dispensing aperture when the lid is closed. Said lid is normally locked in closed position by said locking ring. To open the container the locking ring must be rotated to a position to release the lid which can then be lifted to remove the stopper from the dispensing aperture. Rotation of the locking member to release the lid stresses one or more springs carried by said locking ring so that after the lid is opened, the locking ring is returned to its original locking position by the springs. When the lid is closed cooperating cam surfaces on the lid and locking ring rotate the locking ring to again stress the springs, which thereafter automatically return the locking ring to locking position to again lock the lid in closed position.

3,773,204

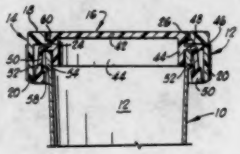
CONTAINER AND SAFETY LID THEREFOR

Ray D. Stroud, 2421 N.W. 59th St., Oklahoma City, Okla.

Filed May 19, 1972, Ser. No. 254,870

Int. Cl. B65d *55/02*; **A61j** *1/00*

U.S. Cl. 215—9 **10 Claims**



A container and safety lid combination comprising a cylindrical container having a compound safety lid detachably mounted thereon, the safety lid including a centrally apertured outer portion, and an inner portion rotatably mounted in the outer portion for rotation about a vertical axis coincident with the axis of the container. The inner portion of the lid includes a plurality of downwardly extending legs which extend parallel to the axis of the container and along the cylindrical side wall thereof. The legs carry shoulders adapted to engage a rib or bead formed around the upper portion of the container. The outer portion of the lid includes a peripheral, downwardly extending flange positioned outside the legs of the inner portion of the lid, with such flange carrying recesses or relieved portions dimensioned to accommodate the legs of the inner portion in one relative position of the inner and outer portions of the lid. The flange of the outer portion also carries cam surfaces for biasing the legs into engagement with the rib or bead on the container when the inner portion of the lid is rotated relative to the outer portion thereof.

3,773,205

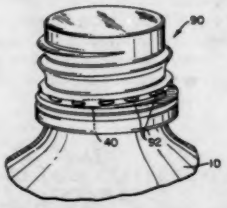
THERMOFORMED CLOSURES WHICH ARE SEALED TO CONTAINERS BY THE USE OF SONIC ENERGY AND THE METHOD OF SEALING THE SAME

Frederick D. Keeler, Trumbull; Carleton Ellis, Jr., Southport, and John C. Miller, Trumbull, all of Conn., assignors to The KLM Company, Stratford, Conn.

Filed Mar. 4, 1971, Ser. No. 120,893

Int. Cl. B65d *41/20*

U.S. Cl. 215—42 **16 Claims**



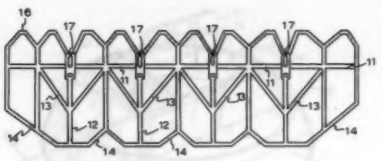
Closures thermoformed from a relatively thin sheet of plastic material are sealed to containers by the use of sonic energy to control the amount of torque needed to unfasten such closures and also to provide a "tamper-proof" seal.

3,773,206

DEVICE FOR PACKING BOTTLES OR SIMILAR

Javier Elizondo Garcia, Escobedo Sur 733, Suite 316, Monterrey, Mexico

Filed Feb. 16, 1971, Ser. No. 115,484
Int. Cl. B65d *25/06*
U.S. Cl. 220—21 **2 Claims**



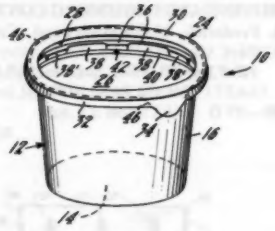
A partition assembly for packing bottles in a box is formed of longitudinal and transverse plastic framework sections that interfit together in locked position by means of spring clamp structure formed in the plastic sections.

3,773,207

EASY-OPEN THERMOPLASTIC CONTAINER PACKAGE

Jan A. Dokoupil; Kenneth George Greil, and David Charles Mueller, all of Neenah, Wis., assignors to American Can Company, Greenwich, Conn.

Filed Nov. 30, 1971, Ser. No. 203,308
Int. Cl. B65d *17/00*
U.S. Cl. 220—27 **22 Claims**



A thermoplastic container package wherein both the container and its lid have horizontal rims and descending flanges. The lid rim has a peripheral score line along its undersurface and the flanges are sealed along their length except adjacent a lid tab utilizable for lifting and thereby severing the score line and removing the lid from the container. A tight fitting reclosure of the lid is obtained by the coaction of an outwardly protruding lid closure bead adjacent the junction of the lid central panel and its peripheral substantially vertical wall, and of a juxtaposing groove surrounding the inside of the container.

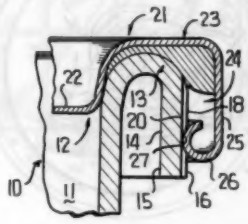
3,773,208

CONTAINER AND CLOSURE COMBINATION

John J. Curry, Westchester, Ill., assignor to Phoenix Closures, Inc., Chicago, Ill.

Filed Oct. 27, 1970, Ser. No. 84,349
Int. Cl. B65d *43/04*
U.S. Cl. 220—43 R **2 Claims**

This disclosure relates to a container of thermoformed plastic material having a metallic closure, the closure being of a conventional construction and including a channel terminating in a relatively rigid peripheral skirt, the container having a body terminating at an upper end portion in a bead having a peripheral skirt normally disposed upon the upper end portion of the container body, and the peripheral skirt of the closure being of an internal diameter less than the predetermined maximum diameter of the container peripheral skirt whereby the container body peripheral skirt is deflected inwardly by the closure peripheral skirt to a diameter less than the predetermined maximum diameter thus increasing the frictional purchase between contacting surface portions of the peripheral skirt due to the inherent tendency of the resilient container peripheral skirt to rebound radially outwardly toward its predetermined maximum diameter. In addition, the container peripheral skirt includes an exterior surface formed with circumferentially spaced axially extending lands and valleys, and being constructed from pressure-deformable material whereby the lands are depressed at the contacting surface portions of the skirts as the container peripheral skirt rebounds toward its normal position thus producing a "self-threading" or "self-locking" feature of the invention.

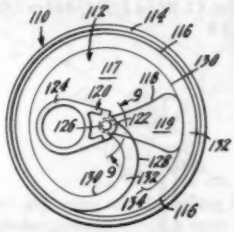


3,773,209

FULL OR PARTIAL OPENING EASY-OPEN CONTAINER END CLOSURE

Alvin Mansfield Schane, Elmhurst, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 30, 1971, Ser. No. 213,965
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **3 Claims**



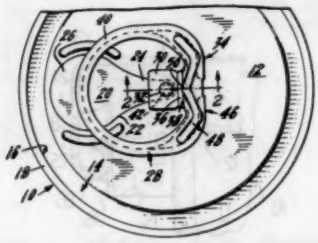
A full or partial opening easy-open container end closure having indented into its central panel a large substantially peripheral score pattern encompassing a smaller score pattern. A rivet secures an opening tab to the panel section defined by the smaller score pattern in a manner that allows the tab to be manipulated to initially rupture a portion of either score pattern and to effect a partial or full opening in the end. At least one of the initial rupturings is not effectable by the tab nose directly rupturing a portion of one of the first or second score lines when the tab handle is lifted in a direction substantially perpendicular to the direction of a portion of one of the score lines, but is effectable adjacent the rivet means when the tab nose is forced downwardly onto a portion of the removable second panel section when the tab handle is lifted upwardly away from the central panel.

3,773,210

OPENING TAB FOR EASY OPEN CONTAINER

Charles Stephan Radtke, 37 Beech St., Little Ferry, N.J.

Filed May 30, 1972, Ser. No. 257,598
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **10 Claims**



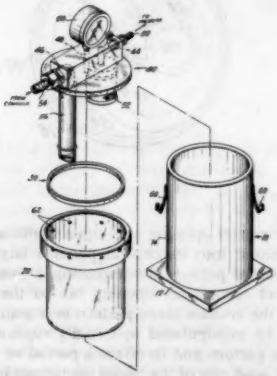
An opening tab for an easy open container having an attachment portion secured to a removable panel included in the central panel of an end closure, a fulcrum portion integrally connected to the attachment portion and having a fulcrum edge for fulcruming said opening tab against the central panel of the end closure spacially distant from the removable panel, and a lifting handle integrally connected to said fulcrum portion and forming a longitudinally rigid lever therewith. A reinforcing means is provided in the fulcrum portion extending into and interrupting the juncture between the fulcrum and attachment portions thereby preventing the formation of a sharp angle of bend at the juncture between the fulcrum and attachment portions during the fulcruming operation and also increasing the strength of the fulcrum portion during the fulcruming operation.

3,773,211

UTERINE ASPIRATION COLLECTION BAG

Henry Bridgman, P.O. Box 71, Morristown, N.J.

Continuation-in-part of Ser. No. 63,480, Aug. 13, 1970, Pat. No. 3,713,444. This application June 1, 1971, Ser. No. 148,483
Int. Cl. B65d *25/14*; A61m *1/00*
U.S. Cl. 220—63 R **6 Claims**



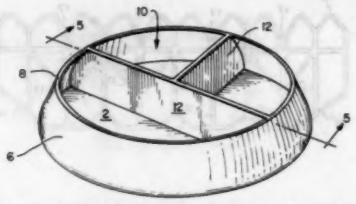
In a uterine aspiration apparatus, a plastic collection bag is used inside a single rigid collection bottle. The bag is of a design that it does not collapse when the aspiration vacuum is applied to the bottle. The bag collects the produces of the operation and thus (1) keeps the rigid bottle clean for the next operation, and (2) conveniently stores the aspirated material for future laboratory analysis or recording purposes.

3,773,212

CHILDREN'S FEEDING DISH

Stanley H. Sekuler, Silver Spring, Md., L & S Associates, Inc.

Filed June 15, 1971, Ser. No. 153,280
Int. Cl. B65d *7/42*
U.S. Cl. 220—83 **8 Claims**



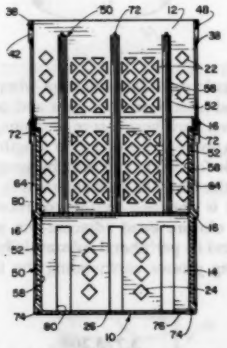
A children's feeding dish for training children how to scoop food onto an eating utensil, e.g., a spoon, and comprising a flat bottom and having integrally formed with the outer edge of the bottom, an arcuate or bow-like upwardly and inwardly extending side wall terminating in an edge having essentially the same shape as the outer edge of the bottom. Preferred embodiments having integrally formed compartments and/or an outwardly extending lip are also disclosed.

3,773,213

SHIPPING AND DISPENSING CONTAINER

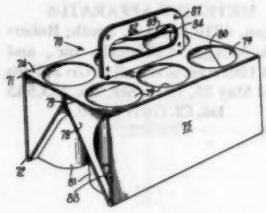
William H. Frederick, North Hollywood, Calif., assignor to Nathan Gilbert, Sherman Oaks, Calif.

Filed July 23, 1971, Ser. No. 165,523
Int. Cl. B65d *21/00*
U.S. Cl. 220—97 D **10 Claims**



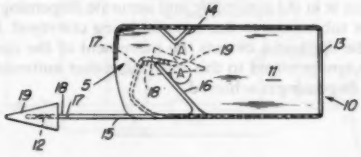
A shipping and dispensing container is fabricated as a unitary structure from synthetic plastic material by such means as injection molding. The container is characterized by the fact that it can be stacked upon and below identical containers when filled with merchandise and can be internested with identical containers when empty for return to the packaging plant. The container incorporates columnar reinforcing and supporting means which are interengageable with identical means of a superimposed filled container when the containers are stacked one upon the other. The container also includes nesting receptacles adapted to receive said columnar means when the containers are disposed in internested condition.

3,773,214
CONTAINER CARRIER
William C. Lemon, P.O. Box 182, Tiburon, Calif.
Continuation of Ser. No. 16,623, June 2, 1969, abandoned, which is a continuation of Ser. No. 616,234, Feb. 15, 1967, abandoned. This application Sept. 7, 1971, Ser. No. 178,149
Int. Cl. B65d *5/46*
U.S. Cl. 220—115 **12 Claims**



A thermoplastic sheet material carrier for a plurality of single service containers such as bottles, having a carry-handle integral with the carrier body. Various styles utilize formed bottom-wall container wells, formed side-wall container wells, and an apertured carrier requiring no forming or molding. Integral strengthening sheet portions, container well drain facilities and reverse-folded insertion of the sheet ends through a central slot also are features of the invention.

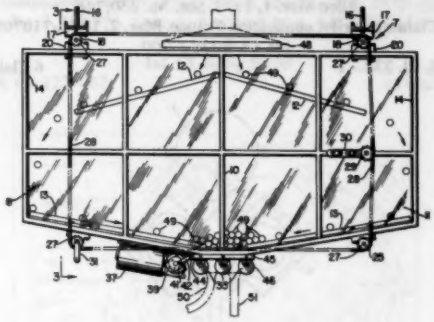
3,773,215
PILL DISPENSER WITH RESILIENT, INTEGRAL, EXTENDED WALL PORTION FORMING A SLIDING GATE
George Makarevitz, East White Plains, N.Y., assignor to Tiros Plastics Corporation, White Plains, N.Y.
Filed June 16, 1971, Ser. No. 153,663
Int. Cl. B65d *83/04*
U.S. Cl. 221—64 **7 Claims**



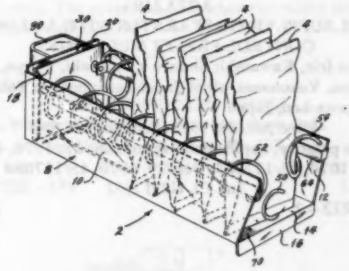
A dispenser for tablets or like items in the form of a covered box, a portion of the wall of the box being resilient and deflectable inwardly to open a dispensing passage for one or more items while restraining the remainder of the contents.

3,773,216
CAN ACCUMULATOR AND DIVIDER
Robert E. Cockerhill, 3208 Haddon Rd., Louisville, Ky.
Filed Aug. 10, 1972, Ser. No. 279,325
Int. Cl. B65h *1/14*
U.S. Cl. **10 Claims**

A combined accumulator or stroage unit for cans and a divider for dispensing the cans therefrom through one or more flow lines and at different rates of discharge. The accumulator or storage unit is capable of being adjusted by a simple manual operation for accommodating cans or similar receptacles or tubes of various lengths, and which can be quickly and accurately accomplished to minimize the downtime that would otherwise occur. Specially constructed swivelly mounted threaded sleeves insure acurate movement of one wall of the accumulator relative to the other in accomplishing the manual adjustment.



3,773,217
DISPENSING MACHINE FOR BAGGED PRODUCTS
Stanley O. Schlaf, Rt. 1, Box 355, Winfield, Mo.
Filed Apr. 25, 1972, Ser. No. 247,455
Int. Cl. G07f *11/00*
U.S. Cl. 221—75 **15 Claims**



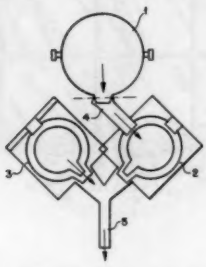
A machine for displaying and dispensing bagged products includes a rectilinear housing which is open at its top and at one end. The opposite end of the housing is closed and supports three helices, two of which extend through the upper portion of the housing adjacent to the sides thereof, while the third is centered with respect to the two upper helices but is located below them and rests on the bottom wall of the housing. The three helices are connected through a drive train at the closed end of the housing and rotate at the same angular velocity. An electric motor drives a hub forming part of the drive train and thereby rotates the three helices. The bags are fitted between the convolutions of the three helices with the upper helices engaging the sides of the bags and the lower helix engaging the bottoms of the bags, and accordingly the bags are arranged in an orderly succession and display in an upright position. One full revolution of the helices drives the endmost bag out of the open end of the housing, thus dispensing that bag, and advances each of the remaining bags one convolution.

3,773,218

METHOD OF REGULATING MOLTEN METAL SUPPLY

Aristide Berthet, and Jacques Blum, both of Metz, France, assignors to Institut De Recherches De La Sidergie Francaise (IRSID), Saint Germain-En-Laye, France

Filed Mar. 1, 1972, Ser. No. 230,746
Claims priority, application France, Mar. 2, 1971, 7107098
Int. Cl. B22d *37/00*
U.S. Cl. 222—1 6 Claims



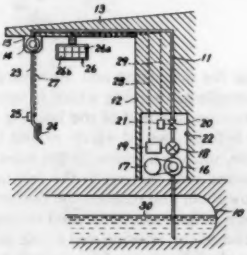
Method and apparatus for maintenance of a constant supply of molten metal in metallurgical equipment. A supply ladle alternately feeds into one of two intermediate tipping vessels. The tipping of one vessel is initiated when a predetermined emptying value of the other vessel is reached, and the flow of metal flowing from the one vessel is brought to a zero value when the flow of metal flowing from the one vessel is detected. Vessels in operative position are continuously weighed to generate a voltage signal that corresponds to the emptying weight, and this signal is compared with a reference voltage signal so that a differential voltage produced thereby can control the rate of tipping of one of the vessels.

3,773,219

FUEL SUPPLYING APPARATUS WITH A REMOTE CONTROL PRESET MECHANISM

Yoshihiko Irie, Kawasaki; Shunro Yamawaki, Tokyo, and Isao Ohyama, Yokohama, all of Japan, assignors to Tokico Ltd., Kanagawa-ken, Japan

Filed Jan. 20, 1971, Ser. No. 107,880
Claims priority, application Japan, Jan. 21, 1970, 45/5507; Dec. 29, 1070, 45/127083; Dec. 29, 1970, 45/127084
Int. Cl. G07f *7/02*
U.S. Cl. 222—2 3 Claims



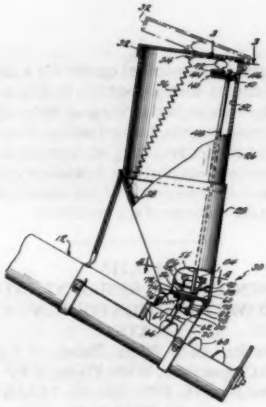
A fuel supplying apparatus with a remote control preset mechanism which comprises a preset operation part provided at a readily reached position on a fuel supply nozzle or on a hose adjacent to the nozzle and a main preset mechanism provided at a position remote from the preset operation part and effecting presetting by signals transmitted from the preset operation part. The preset operation part and the main preset mechanism are connected by relatively few signal transmitting wires. The preset mechanism emits a valve closing signal when a preset numerical value and a numerical value obtained from signals transmitted by the signal emitting part of the flowmeter, corresponding to the quantity of fuel which has been supplied, coincide with each other. The fuel supplying apparatus stops its supply of fuel in response to the valve closing signal.

3,773,220

METERING APPARATUS

Everett V. Morgan, 4816 5th Ave. South; Robert W. Haynes, c/o Haynes & Morgan Chemicals, Inc., and Gordon F. Schmidt, 1118 10th Ave. S.W., all of Great Falls, Mont.

Filed May 15, 1972, Ser. No. 253,543
Int. Cl. G01f *11/00*
U.S. Cl. 222—48 7 Claims



The subject matter of the invention is an improved metering apparatus for a hopper mechanism. The hopper mechanism is attached to a conveyor carrying dry bulk material. The improvement of the instant invention over conventional metering devices is in the automatic and accurate dispensing of dry treatment substances to the material being conveyed. In particular, the apparatus detects the movement of the conveyor and is so synchronized to this movement that automatic and accurate dispensing is achieved.

3,773,221

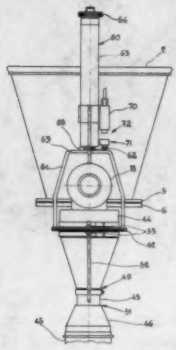
APPARATUS FOR THE FINE DOSAGING OF SUBSTANCES

Adolf Lesk, and Ottmar Link, both of Osterburken, Germany, assignors to Adolf Zimmermann, Maschinenbau, Osterburken, Germany

Filed Dec. 29, 1971, Ser. No. 213,438
Claims priority, application Germany, Jan. 7, 1971, P 21 00 601.9
Int. Cl. B65d *83/06*
U.S. Cl. 222—56 16 Claims

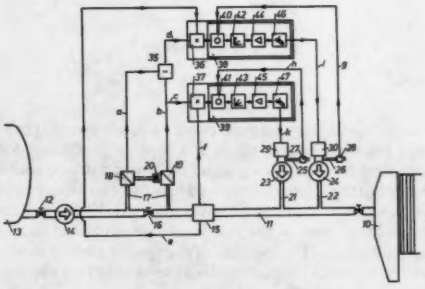
Apparatus for the fine dosaging of substances, more particularly substances tending to form bridges and to cake together, by means of a feed device removing the material in small quantities from a supply container, and possibly a weighing device connected thereto, characterised in that the feed device comprises a known worm which is taken laterally out of the supply container and is surrounded by an elastomeric guide tube, the guide tube supported at places by a concen-

tric, relatively large supporting tube which is secured to the supply container. The supply container comprises a loosening



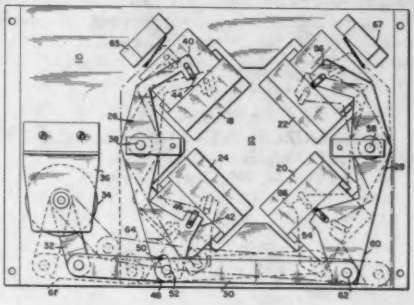
floor for the material resting on it and the loosening floor consists of an air-pervious material at the underside of which air pressure impulses or blasts can be applied.

3,773,222
DOSING INSTALLATION
Erich Fiebiger, Siefersheim, Germany, assignor to Seitz-Werke G.m.b.H., Bad Kreuznach, Germany
Filed Oct. 10, 1972, Ser. No. 296,193
Int. Cl. B67d *5/08*
U.S. Cl. 222—57 **3 Claims**



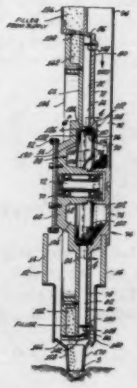
A dosing system for continuously dosing and dispensing the respective quantities of auxiliary filtering substances to be added in connection with a settling filtration to a cloudy liquid, especially beer, for the cooling and yeast sediments, according to which for dispensing an auxiliary filtering substance for the cooling sediments as well as an auxiliary filtering for the yeast sediment there is provided one dosing device each equipped with a flow meter while both devices which are directly connected to the cloudy liquid conveying conduit are preceded by a flow meter and a device for measuring the total cloudiness of the liquid and by a measuring device provided with a heating zone for measuring the yeast sediment in the cloudy liquid conveying conduit. The dosing installation includes a control device for controlling the dosing devices in conformity with the cloudiness measured by the respective devices.

3,773,223
CURRENCY DISPENSER
Justin J. Guidi, Weston, and Charles F. Middleton, Sudbury, both of Mass., assignors to Digital Security Systems, Inc., Natick, Mass.
Continuation-in-part of Ser. No. 92,824, Nov. 25, 1970, Pat. No. 3,710,976. This application Nov. 6, 1972, Ser. No. 303,859
Int. Cl. B65g *59/00*
U.S. Cl. 222—67 **11 Claims**



A unit for storing bills in a currency dispensing system. An upright cannister stores a stack of bills, with successive bills in the stack oriented at right angles to each other. A support has a cruciform opening corresponding to the bill orientations, and into which the cannister fits. Two sets of opposed pairs of doors in the opening are normally closed by two pivot arms, preventing bills from being dispensed. A drive lever and drive shaft connect the pivot arms to a double-winding stepping motor. Actuating this motor in the forward direction moves the pivot arms so as to allow one set of doors to open and thus form a passage for bills, while maintaining the second set positively blocked. The reverse is true when the motor is actuated in the reverse direction.

3,773,224
SEED DISPENSING WHEEL
James C. Winslow, 5257 Shore Dr., Carlsbad, Calif.
Filed Oct. 14, 1971, Ser. No. 189,451
Int. Cl. A01c *15/00*
U.S. Cl. 222—139 **12 Claims**



Apparatus for sequentially planting seeds at desired spaced loci in a row, usually at the bottom of a furrow. Includes

means for depositing a mound of loose friable filler on top of each seed to ensure penetration of growth stalk to surface. In one form, seed planting wheel carries seed pickup ring which receives seeds from compartment, carries them through confined path and delivers them to radial channels for sequential deposit by gravity in furrow. A filler pocket is located laterally adjacent to each channel outer end and receives filler from filler compartment. Release means causes seed to drop in time sequence before releasing filler at same locus to overlie seed and provide yieldable cover for growth stalk. In variant, distributor means is belt with longitudinally spaced pairs of laterally adjacent holes therethrough. Belt passes under seed and filler compartments, picks up supplies and subsequently drops them in furrow. Same type of sequential release means causes seed to fall first and filler to fall on top of seed.

3,773,225

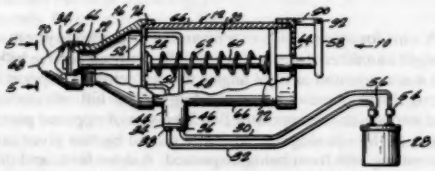
PRESSURIZED DECORATING DEVICE

Aldo Repola, 628 E. 240th St., Bronx, N.Y.

Filed Jan. 25, 1971, Ser. No. 109,458

Int. Cl. B67d *5/60*

U.S. Cl. 222—144.5 **1 Claim**



This invention relates to an apparatus for decorating pastry and the like comprising housing having a first chamber, means for dividing said first chamber into a plurality of isolated compartments, a second chamber detachably connected to the first chamber, reservoir means for a plurality of differently colored pastry decorating materials, pressurized feed means for selectively feeding the decorating materials from the reservoir means to the first chamber, dispensing means on the second chamber, and valve means for controlling flow of decorating materials outward of the dispensing means. Shaft means extend through the first and second chambers and have the valve means disposed on one end, the shaft means having its other end extending outwardly of the first chamber, and spring means disposed about said shaft in the first chamber for normally urging the shaft and thus the valve means into a closed position and so that depression of the other end of the shaft means will open the valve means and upon release of the other end the spring means will close the valve means.

3,773,226

CONTAINER WITH SLIDING SHUTTER FOR A LIQUID MELT

Hans-Joachim Kutzer, Wiesbaden-Rambach, Germany, assignor to Didier-Werke AG, Wiesbaden, Germany

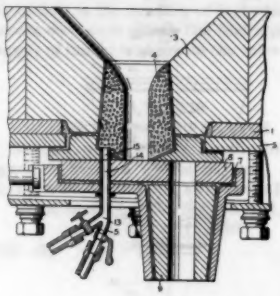
Filed Mar. 12, 1971, Ser. No. 123,612

Claims priority, application Germany, Apr. 23, 1970, P 20 19 550.0

Int. Cl. B22d *37/00*

U.S. Cl. 222—148 **7 Claims**

A container with a sliding shutter for a liquid melt having an orifice plate of refractory material with a flow passage fixed on the bottom of the container. A slidable valve plate has a flow passage opposite the orifice plate. A gas permeable body through which gas can be fed to the melt cooperates with the flow passage of the orifice plate. A plurality of gas conduits



are connected with the gas permeable body for feeding selectively various gases to the melt. The conduits are provided with a three-way valve.

3,773,227

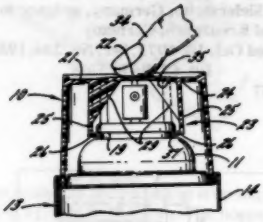
CHILDPROOF OVERCAP FOR AEROSOL CANS

Robert B. Laing, and George Solowiejko, both of Rockford, Ill., assignors to J. L. Clark Manufacturing Co., Rockford, Ill.

Filed Jan. 7, 1972, Ser. No. 216,165

Int. Cl. B67b *5/00*

U.S. Cl. 222—153 **12 Claims**



An overcap for aerosol cans comprising an inverted cup of resilient plastic having a top in the form of a shallow dome depressible downwardly to expand the lower end of a split expandable skirt and release inturned lugs thereon from beneath a shoulder at the upper end of the can breast. The resiliency, shape, and thickness of the plastic parts is such that an adult, but not a small child, is capable of depressing the top dome to expand the skirt and release said lugs so as to permit the cap to be lifted off from the top of the aerosol can.

3,773,228

TURRET DEVICE FOR CONTINUOUS CASTING INSTALLATIONS

Wilhelm Koch; Gustav Walter, both of Duisberg, and Siegfried Dangeleit, Krefeld, all of Germany, assignors to Demag A.G., Duisburg, Germany

Filed Dec. 15, 1970, Ser. No. 98,223

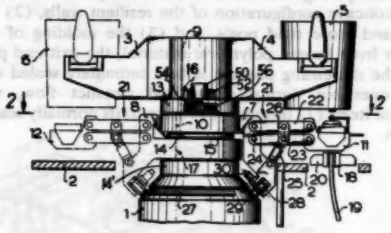
Claims priority, application Germany, Dec. 17, 1969, P 19 63 147.1

Int. Cl. B22d *11/10*

U.S. Cl. 222—168 **2 Claims**

A turret device for continuous casting installations for the maneuvering of metallurgical supply vessels, in particular, pouring ladles and distributor gutters for pouring receivers and the like, includes a first bearing pivotable about a vertical axis which carries one or more arms for carrying the supply

vessels which are rotatable with the pivot bearing for around the pivot bearing and a second set of pivotal arms which are independently or pivotable about the same or additionally



concentrically arranged bearing at a distinct level from the first set of arms and which are provided for supporting distributor gutters and similar devices which are to be arranged at a different level from the ladles.

3,773,229

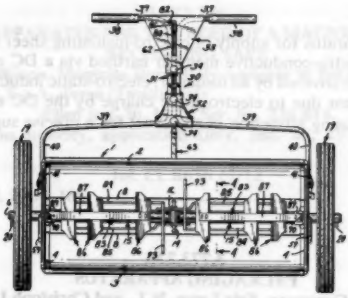
GRANULAR APPLICATOR FOR LAWNS

Ebenhard S. Gandrud, P.O. Box 528, Owatonna, Minn.

Filed July 29, 1971, Ser. No. 167,353

Int. Cl. A01c *15/00*

U.S. Cl. 222—177 **11 Claims**



An applicator for spreading granular chemicals, such as pesticides and fertilizer or seed over the ground, comprising a hopper having a cross-sectionally arcuate bottom member the bottom member having discharge apertures therein, and an elongated shaft means equipped feeding rotor journaled in the bottom portion of the hopper parallel to the arcuate bottom. A pair of supporting wheels are mounted on the shaft means for imparting rotation to the rotor responsive to movement of the applicator over the ground. Rotor driven agitator means are disposed within the hopper, and a combination spreader and closure plate is mounted exterior of the hopper for movements toward and away from the discharge apertures. A shank projecting laterally from the hopper provides means whereby the applicator is moved over the ground, and an actuator is disposed to impart movements to the spreader and closure plate.

3,773,230

DISCHARGE OF CONTAINERS AND PRESSURE VESSELS

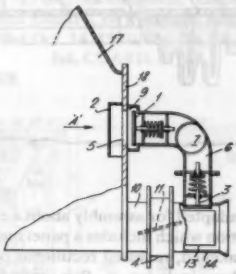
Ralph Murfitt, Wisbech, Cambs, England, assignor to Rowan Investments Ltd., Douglas Isle of Man, United Kingdom

Filed Dec. 2, 1971, Ser. No. 204,209

Claims priority, application Great Britain, Nov. 18, 1970, 54,915/70

Int. Cl. B67d *5/54*

U.S. Cl. 222—193 **15 Claims**



To facilitate removal of pourable substances such as powdered or granular material and liquids from closed storage and/or transporting containers, pressurised air is fed through a common air inlet system into the container and into an outlet conduit extending from the container. To avoid blockage in the outlet conduit, a shroud is provided over each air inlet to the chamber to direct the air transversely of the outlet of the container to form an air curtain across the outlet, and the branches of the common air inlet system which are connected to the air inlets and the outlets of the container are provided with flow regulating means which ensure that air is fed to the outlet conduit whenever pressure in the air inlet system rises above a predetermined value as a result of back pressure in the container.

3,773,231

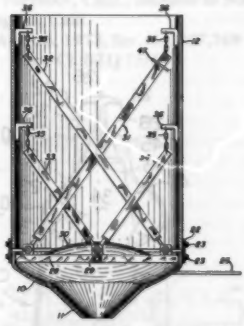
APPARATUS FOR PROMOTING DISCHARGE OF MATERIAL FROM A BIN OR THE LIKE

Eugene Wahl, Glen Ridge, N.J.

Filed June 12, 1972, Ser. No. 261,584

Int. Cl. B65g *3/12*

U.S. Cl. 222—198 **5 Claims**

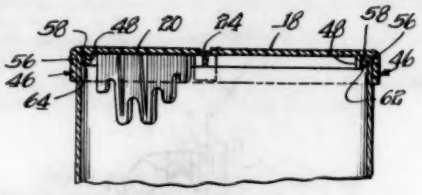


A vibratable material-receiving member, carrying a baffle, is attached to the bottom of a storage bin to promote the discharge of material therefrom. The material-receiving member also carries arms extending upwardly into the bin, which arms carry the vibratory effect to material in the upper portions of the bin.

3,773,232
DISPENSING COVER WITH LIFTABLE SIFTER FOR USE ON SPICE CANS AND THE LIKE

Walter E. Hidding, 505 Banbury Rd., Arlington Heights, Ill.

Filed Apr. 19, 1971, Ser. No. 135,081
Int. Cl. A47g 19/24
U.S. Cl. 222—480 8 Claims

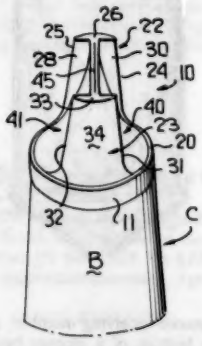


A cover fitting adapted for assembly about a container comprises a cover portion which includes a panel member having a hinge along a weakened, recessed rectilinear portion thereof and which further includes a flap member swingably suspended from the hinge. The hinge defines an axis which subtends a pair of confluent edges of the flap member; and the flap member is pivotable downwardly about the hinge whereby to engage an edge of the container for enclosure about a portion of the cavity defined by the walls of the container, the flap member further being pivotable upwardly about the hinge whereby to disengage from the edge of the container for disclosure of the cavity portion. A sifter web depends from the flap member and is adapted for selective extraction of comminuted matter within the container. A finger element may also depend from the flap member and be spaced from the sifter web whereby to overlie an edge of the container to lock the flap member in a substantially upright or dispensing position, thereby guarding against any unauthorized downward force upon the flap member when sifting of the product is contemplated.

3,773,233
SELF-CLOSING DISPENSER

Augustine A. Souza, San Jose, Calif., assignor to Phoenix Closures, Inc., Chicago, Ill.

Filed Dec. 28, 1970, Ser. No. 101,773
Int. Cl. B65d 5/74
U.S. Cl. 222—490 9 Claims

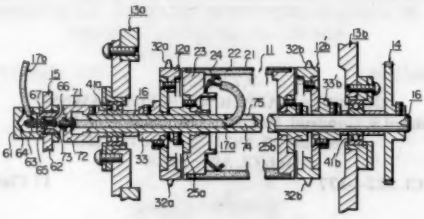


This disclosure relates to a self-closing dispenser comprising a dispenser body defining a generally elongated passage having exit and entrance end portions, the body being molded from synthetic polymeric material and including two diametrically opposite relatively rigid and immovable upstanding posts, and a pair of resilient concavely outwardly opening walls extending laterally between the posts and axially between the passage exit and entrance end portions. Due to the (1) concave configuration of the resilient walls, (2) the heavier and more rigid posts, and (3) the molding of the dispenser from heated polymeric material, the exit end portion of the dispensing passage is held intimately sealed and though openable during pressurized product flow, will because of items (1) through (3) return to its normally sealed condition.

3,773,234
APPARATUS FOR SUPPLY OF ELECTRO-INSULATING SHEET

Akira Saito, and Tetsusabulou Ikeda, both of Tokyo, Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 211,957
Int. Cl. B65h 17/18
U.S. Cl. 226—94 4 Claims



An apparatus for supply of electro-insulating sheet including an electro-conductive member earthed via a DC electric source and covered by an insulator, electro-static induction on the insulator due to electro-static charge by the DC electric source causing attraction of the sheet for a precise supply of the latter.

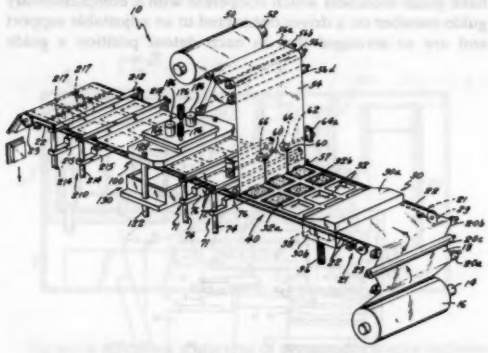
3,773,235
PACKAGING APPARATUS

Ernest V. Canamero, Fair Lawn, N.J., and Christoph Ullman, St. Mang/near Kempten, Germany, assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 83,902, Oct. 26, 1970, Pat. No. 3,608,831.
This application Apr. 6, 1972, Ser. No. 241,780
Int. Cl. B65h 17/42
U.S. Cl. 226—112 1 Claim

An automatic packaging machine makes hermetically sealed packages from which air has been exhausted by laminating two continuous sheets of packaging material. A roll of film on one end of the machine supplies a continuous support sheet to a chain belt conveyor which grips the opposite edges of the support sheet leaving the web unsupported, and transports this sheet the length of the machine. A vacuum forming die makes a plurality of receptacles in the support sheet in aligned longitudinal and transverse rows with transverse and longitudinal margins about the periphery of the receptacles. Another roll of film supplies a continuous cover sheet which is applied over the support sheet, the cover sheet

being expediently severed longitudinally by a cutting blade in alignment with the inner longitudinal margins between the receptacles prior to application over the support sheet. The sheets are then heat sealed along the transverse margins. Subsequently, an evacuation unit heat seals the sheets along the



outer longitudinal edge margins and an evacuation head exhausts the air from the receptacles through the evacuation opening advantageously provided by the severed cover sheet. A sealing bar in the evacuation head then closes the opening and the cover sheet is finally heat sealed to the support sheet in the areas adjacent the opening.

3,773,236

APPARATUS FOR THE FEED OF A MAGNETIC RECORDING TAPE

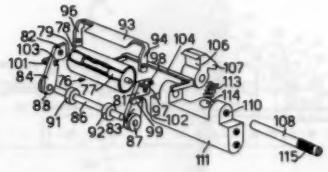
Flavio Bisson, Montalto Dora, Italy, assignor to Ing C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Jan. 26, 1972, Ser. No. 220,814

Claims priority, application Italy, Jan. 28, 1971, 67276 A/71

Int. Cl. B65h *17/12*

U.S. Cl. 226—186 **6 Claims**



The apparatus is used for the feed of a magnetic recording tape, particularly of the type closed in the form of a loop and contained in a removable cartridge used as a record store of recirculating type and employed as an external mass memory for the purpose of recording and/or playing back data or programs. The cartridge is equipped with a cylindrical driven roller in constant contact with the rear surface of the tape, while an exposed portion of the tape bears against a magnetic head and a driving roller so that the exposed portion is nipped between the driving roller and the driven roller. The driven roller is resiliently mounted and/or is provided with a resilient covering whereby the driven roller can adapt itself to the driving roller.

3,773,237

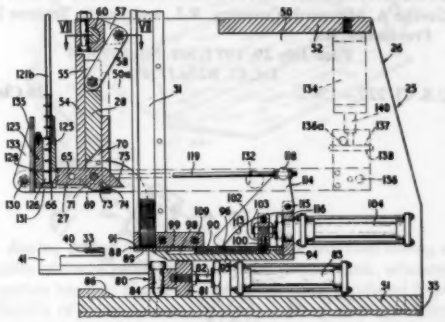
MACHINE FOR ATTACHING PRONGED GARMENT FASTENERS

Adrian Robert Cruse, Birmingham, England, assignor to Thomas Walker Limited, Birmingham, England

Filed Oct. 14, 1970, Ser. No. 80,674

Int. Cl. A41h *37/02*

U.S. Cl. 227—18 **7 Claims**



A power-operated machine is disclosed for attaching pronged hook-and-eye fasteners to garments. The machine has a unit construction permitting two similar self-contained clenching units having left-hand and right-hand configurations respectively to be fitted side-by-side to enable pairs of fasteners to be attached simultaneously throughout an extended range of spacings. An anvil-carrying mandrel for inserting into a garment waistband may be included, together with automatically operable means for supporting the mandrel and means for feeding the pronged fasteners and back-plate components to co-operating upper and lower dies.

3,773,238

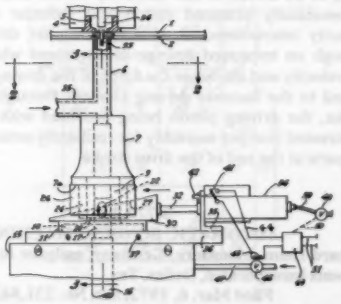
BACKUP WEDGE DEVICE FOR A FASTENER INSTALLING MACHINE

Edwin A. DeVoss, Torrance, Calif., assignor to Northrop Corporation, Los Angeles, Calif.

Filed Apr. 26, 1972, Ser. No. 247,769

Int. Cl. B21j *15/10*

U.S. Cl. 227—61 **10 Claims**



An automatic drilling and riveting machine or the like is provided with a movable mechanical blocking member

between the hydraulic lower ram and the air pressure operated lower work clamping member riding thereon. A block driving member in the form of a wedge is movable into and out of engagement with the block to raise it and mechanically lock the clamping member against the work after the upward clamp-up motion of the ram and clamping member is completed. This provides a positive backup force for the insertion of interference-fit fasteners forced through the work, without causing excessive clamping forces on the work pieces which would mark or distort them. The movable block member can be omitted when a cooperating tapered wedge surface is formed on one of the existing machine parts. The full specification must be consulted for an understanding of the invention.

3,773,239

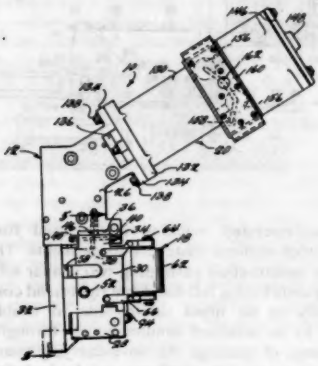
PNEUMATICALLY ACTIVATED NAIL DRIVING DEVICE

George A. Maynard, Coventry, R.I., assignor to Textron Inc., Providence, R.I.

Filed July 29, 1971, Ser. No. 167,414

Int. Cl. B25c *1/04*

U.S. Cl. 227—130 **26 Claims**



A fastener driving device particularly suited for use as a component of a production machine, the device embodying a housing structure configured so as to permit a pair of such devices to be mounted in either abutting or lapped relation to simultaneously drive two fasteners on centers spaced as close as 1¼ inches apart, the device embodying an improved mechanism for feeding successive nails from a large coiled package initially into a nail severing position from which position successive nails are separated from the package and then moved into a nail feeding position and then finally into a driving position within the drive track during one operative cycle so as to be driven in the next, the device also embodying a pneumatically actuated piston and cylinder unit of large capacity interconnected with the fastener driving element through an improved linkage arrangement which decreases the velocity and increases the force of the driving piston transmitted to the fastener driving element throughout the drive stroke, the driving piston being provided with an improved prestressed bumper assembly for resiliently arresting the moving parts at the end of the drive stroke.

3,773,240

AUTOMATIC BONDING MACHINE

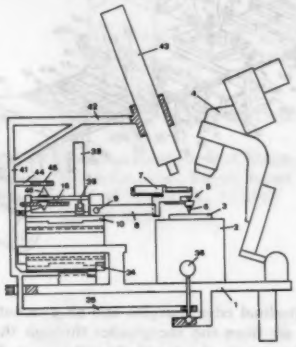
Richard Heim, Moosburg, Germany, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 6, 1972, Ser. No. 231,843

Int. Cl. B23k *37/04*

U.S. Cl. 228—4 **18 Claims**

A machine for attaching connecting wires to connection points of a semiconductor component and to connection points of a housing which is to accommodate the semiconductor component is comprised of a wire guide which is vertically adjustable with respect to the semiconductor component and to the housing and through which a wire is fed and a support which is adjustable in two dimensions parallel to the plane of a semiconductor component and which carries either the housing with the semiconductor component or the wire guide. The machine also includes a programme carrier which may be advanced step by step into successive detent positions and which have guide members which cooperate with a complementary guide member on a driver connected to an adjustable support and are so arranged that in each detent position a guide



member of the programme carrier is disposed from a stationary reference point a distance which in magnitude and direction is in a predetermined relationship to the distance of a connection point from a reference point of the housing of the semiconductor component. The guide members of the programme carrier are conical bores, the driver is a rocker pivotally mounted on the adjustable support and the guide member of the driver is a guide cone. Because of the cooperation of the guide members on the programme carrier and the guide member on the driver, the adjustable support is automatically brought into the positions in which the guide lies exactly above a connection point of the housing or of the semiconductor component.

3,773,241

TUBE AND SHAFT FINNING MACHINES

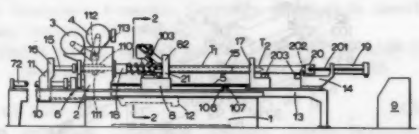
Douglas C. Norris, 6 Savilles Cl., Eaton Socon, England

Filed Sept. 17, 1971, Ser. No. 181,542

Claims priority, application Great Britain, Sept. 22, 1970, 45,165/70

Int. Cl. B23k *1/20*

U.S. Cl. 228—5 **21 Claims**



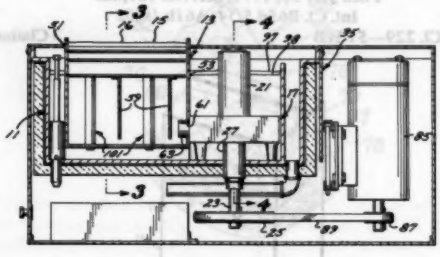
A machine for winding fin onto tubes comprises a bed having a headstock through which passes a retractable mandrel for supporting a first tube. A saddle which traverses the bed carries a strip guide, a guillotine and a welding torch. Strip is wound from one tube to a second aligned with the first, the strip is welded to the two tubes and then severed, the first tube removed, and the second tube returns with the saddle to the position occupied by the first tube.

3,773,242

WAVE SOLDERING APPARATUS HAVING UNOBSTRUCTED WORK PIECE PATH

Robert D. Fitzsimmons, Windham, N.H., assignor to Gale Systems, Inc., Andover, Mass.

Filed Feb. 24, 1972, Ser. No. 228,812
Int. Cl. B23k *1/08*
U.S. Cl. 228—37 7 Claims



The wave soldering apparatus of present disclosure includes a sump for receipt of a predetermined level of molten solder and having a driveshaft-receiving opening in the bottom wall thereof. A fountain is disposed in such sump and is formed with a chamber that leads upwardly above the predetermined level and terminates in a horizontally disposed outlet orifice. Molten solder is pumped into the lower portion of such fountain by pump means which includes an impeller having a driveshaft projecting therefrom and through the driveshaft-receiving opening. Barrier means surrounds such driveshaft means to block molten solder from coming into contact therewith and leaking out through the driveshaft-receiving opening.

3,773,243

CONTAINER FOR ADMINISTERING BARIUM SULFATE FOR UPPER GASTRO-INTESTINAL RADIOLOGICAL EXAMINATION

Franklin R. Greene, Flushing, N.Y., assignor to E-Z-EM Company, Inc., Westbury, N.Y.

Filed July 21, 1971, Ser. No. 164,515
Int. Cl. A47g *19/22*
U.S. Cl. 229—7 S 2 Claims

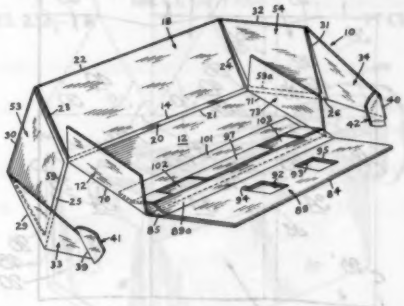
A plastic cup of containing barium sulfate suspension and having a leak-proof removable lid. The lid has an opening through which a soft vinyl straw passes. The diameter of the straw is large enough to permit the patient to rapidly take in the desired mouthful of suspension. The lid opening is slightly undersize relative to the straw so that a leak-proof relationship is created. However, the size of the opening is such that this vinyl straw can readily be moved into any position relative to the lid and thus the bottom of the straw can be positioned anywhere within the cup.

3,773,244

TOY DISPLAY CARTON

Bert J. Dunlap, III, St. Charles, Ill., and Thomas H. Riddell, Clinton, Iowa, assignors to International Paper Company, New York, N.Y.

Filed Sept. 11, 1972, Ser. No. 288,021
Int. Cl. B65d *5/00, 5/50*
U.S. Cl. 229—16 D 11 Claims



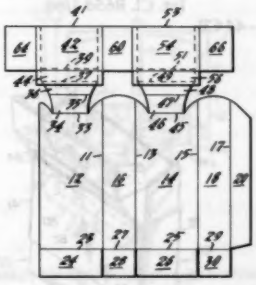
A display carton for toys and the like is provided having a plurality of folds, produced from a flat paper blank, whereby the carton has side panels of double thickness produced from a plurality of folds, laterally extending panel elements from one of the side panels to provide both ends of the carton and to extend to the opposite side panel and tabs to insert into cutouts in said opposite side panel, and being provided with a longitudinal hollow portion along one side of the carton and provided with means to hold a toy truck or the like from becoming loose.

3,773,245

DISPENSING CARTON

George Leroy Meyers, Menasha, and David Charles Mueller, Neenah, both of Wis., assignors to American Can Company, Greenwich, Conn.

Filed May 4, 1972, Ser. No. 250,355
Int. Cl. B65d *5/38*
U.S. Cl. 229—20 5 Claims



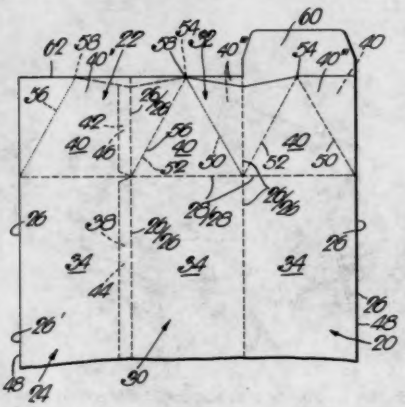
A one-piece paperboard carton for retaining and dispensing cigarettes and the like, the dispensing opening being controlled by a sliding sleeve surrounding the upper portion of the carton body, all exterior areas of the carton and sleeve exposing the same single surface of the paperboard.

3,773,246

LOCKABLE FOLDING TOP ON FOLDING CONTAINER

Walter Tyrseck, Quaker Hill, Conn., assignor to Robertson Paper Box Company, Inc., Montville, Conn.

Filed Apr. 24, 1972, Ser. No. 246,747
Int. Cl. B65d *5/10*
U.S. Cl. 229—39 R **6 Claims**



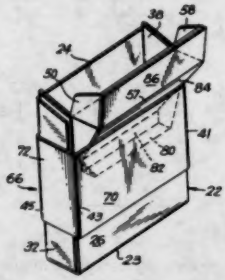
On a folding hexagonal container, a folding top having six top panels continuous with each other and extending coplanar with the container side panels in open top condition, and being foldable about score lines along the top ends of the side panels inwardly into coplanar extension across the container top to close the latter, with two opposite top panels in the set-up container being superposed on the remaining top panels in closed top condition, and being of a length to meet substantially midway of the container top in their top-closing position, and the remaining top panels having appropriate score lines for their folding into partial overlap on their folding into coplanar extension in the closed top, and one of these two superposed top panels in the closed top having an end flap which in closing these superposed top panels is tucked underneath the other superposed top panel to lock both of these panels and, hence, the closed top against opening other than intentional opening.

3,773,247

DISPENSING CARTON

David Charles Mueller, Neenah, Wis., assignor to American Can Company, Greenwich, Conn.

Filed Sept. 1, 1972, Ser. No. 285,915
Int. Cl. B65d *5/66*
U.S. Cl. 229—44 CB **9 Claims**



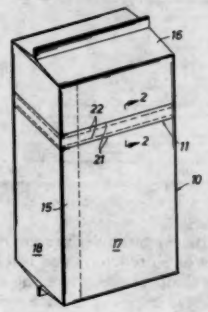
A two-piece paperboard carton for retaining and dispensing cigarettes and the like, comprising a shell and a slide receptacle inserted into the shell. A simple motion of pulling down on the shell is sufficient to open the slide receptacle while an opposite action is effective to close the receptacle.

3,773,248

CONTROLLED ADHESION STERILE PACKAGE SEAL

Howard F. Cecil, Los Angeles, and James L. Armentrout, Huntington Beach, both of Calif., assignors to Southwest Forest Industries, Inc., Phoenix, Ariz.

Filed July 30, 1971, Ser. No. 167,625
Int. Cl. B65d *5/54*; **A61b** *19/02*
U.S. Cl. 229—51 WB **3 Claims**



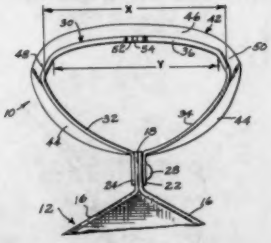
Controlled-adhesion seal for a sterile package utilizing herringbone half-scores and ink-printed adhesive areas bounded on all sides by unprinted adhesive areas, both to promote proper delamination of the paperboard package along the tear strip during opening and insure impermeability to bacteria while sealed.

3,773,249

CARRYING HANDLE

Walter E. Hidding, 505 Banbury Rd., Arlington Heights, Ill.

Filed Sept. 22, 1971, Ser. No. 182,783
Int. Cl. B65d *5/46, 25/28*
U.S. Cl. 229—52 A **8 Claims**



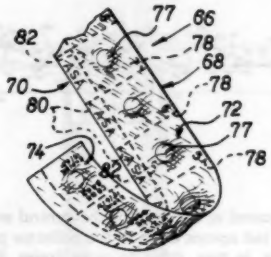
A carrying and pouring handle for a container that is provided with an upper ridge comprises a band of strap material having side pieces and a top piece merging with the side pieces at an angle to form respective corners. Cooperative fastener elements are disposed at opposite ends of the band for use in securing the band to an apertured portion of the container ridge. A rib arrangement is raised from the outer surface of the band integral therewith, and the rib arrangement possesses a first thickness along the side pieces adjacent the fastener elements and a second, greater thickness along the top piece, about the corners and onto the regions of the side pieces adjacent the corners so that, upon convergence of the fastener elements in securing the handle to a container, the upper portion of the band assumes a trapezoidal shape to facilitate holding, pouring and carrying.

3,773,250

MEDICATION DISPENSING

George F. Phillips, Laval, Quebec, Canada, assignor to The North American Dye Corporation Limited, Montreal, Quebec, Canada

Filed July 14, 1971, Ser. No. 162,389
Int. Cl. B65d 27/10
U.S. Cl. 229—69 4 Claims



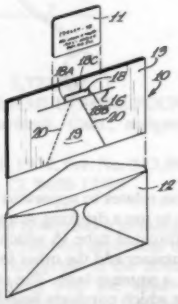
The disclosure herein describes an improved system of dispensing medicine in hospitals; it includes a novel envelope for ordering and obtaining from the pharmacy the medication prescribed for a patient. Indicia representative of the medication and of the patient being administered the medication appear on the flap of the envelope and on the envelope itself. When the envelope is received in the pharmacy, the person responsible removes the detachable flap and files it; he, then, fills the pocket of the envelope with the medication prescribed. The system further includes an improvement in the construction of the package strip of the type having medication containing sealed compartments and being severable between the compartments; the strip is provided with a detachable continuously flat tail portion on which information relating to the medication contained in the sealed compartments is indicated. This tail portion is then affixed on the envelope to show that the medication has been administered to the patient according to the delivery period also indicated on the envelope.

3,773,251

MAIL CARRIER DEVICE

George J. Hadick, Moraga, Calif., assignor to Arvey Corporation, Chicago, Ill.

Filed Apr. 5, 1971, Ser. No. 131,248
Int. Cl. B65d 85/54
U.S. Cl. 229—92.8 6 Claims



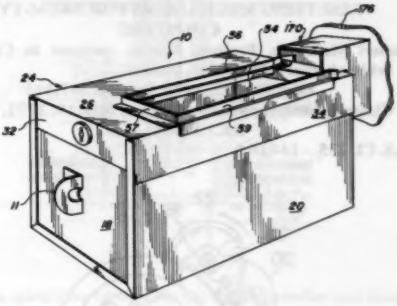
A carrier device for concealing items to be enclosed within an envelope and shipped through the mails. The device is formed of a relatively hard material, which is sealed along its edges to form a pocket. The item to be concealed is placed in the pocket through a slot formed in one of the walls in the device and the item is retained in place by a flap located adjacent the slot wherein the item is inserted.

3,773,252

SELF-LOCKING CASH BOX

Herman George Jensen, Chicago, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed July 2, 1971, Ser. No. 159,200
Int. Cl. G07f 9/06
U.S. Cl. 232—1 R 17 Claims



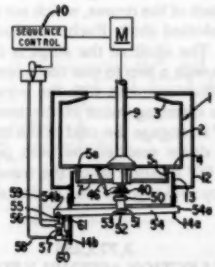
A lid member having a coin and currency receiving opening therein is removably locked to a cash box. The cash box may not be removed from the apparatus in which it is located until a door is actuated to cover the opening, and this door cannot be reactuated to uncover the opening until the lid member is removed from the cash box. An arrangement is provided to render the apparatus in which the cash box is located inoperative when the cash box is removed therefrom.

3,773,253

CENTRIFUGAL BASKET BOTTOM VALVE MACHANISM

Thomas R. Laven, Hamilton, Ohio, assignor to The Western States Machine Company, Hamilton, Ohio

Filed May 25, 1972, Ser. No. 256,762
Int. Cl. B04b 11/00
U.S. Cl. 233—20 R 11 Claims



A cyclical basket having openings in its bottom structure for the removal of centrifuged solids is provided with bottom valve means which are opened and closed by positioning means driven by slow rotation of the basket. The valve means comprise leaves hinged to the spokes of the basket for downward swinging movement to a hanging, open position, with the hinges so disposed that during high speed rotation of the basket the leaves are urged toward closed position both by

the pressure of ambient air and by centrifugal force. The positioning means rotate with and are displaceable in a limited path relative to the basket bottom; for example, a spider turnable on the basket hub is connected with the leaves through rigid links and universal joints. Suitable actuating means, for example, a non-rotary slip clutch member engageable axially with a mating rotary clutch member on the spider, cause the leaves to be closed by rotation of the basket in the centrifuging direction and to be swung open by rotation of the basket in the reverse direction. The links can form toggle joints locking the leaves closed against pressure applied to their upper side.

3,773,254

RESETTING MECHANISMS FOR DRUM-TYPE COUNTERS

Robert Malaviale, Fresnes, France, assignor to Compteurs Schlumberger, Montrouge, France

Filed Nov. 17, 1972, Ser. No. 307,341
Claims priority, application France, Nov. 19, 1971, 7141459
Int. Cl. G06c *15/42*
U.S. Cl. 235—144 DM **4 Claims**

Disclosed is a resetting mechanism of the drums of a counter of the type in which the shaft supporting the drums has a longitudinal slot which, during a revolution of the slotted shaft in the counting direction, successively engages pawls associated with the drums. At the end of one revolution of the slotted shaft, all the drums are reset and display each a zero. The drums are interconnected by transfer pinions which freely rotate on a shaft which is parallel to the slotted shaft and is eccentric with respect to its journals. Driving means are provided for rotating the journals a first half-revolution to disengage the transfer pinions prior to a resetting operation, and a second half-revolution to re-engage them when the drums have been reset. The resetting mechanism includes a set of stops, one for each of the drums, which are mounted on a shaft parallel to the slotted shaft. Each stop has two diametrically opposed lobes. The shaft of the stops is driven by the shaft transfer pinions with a two to one reduction ratio. Each drum has a stud which cooperates with the cooresponding stop so that, during the disengagement of the transfer pinions, each stop rotates 90° to engage the stud of the corresponding drum when the said drum reaches the zero position. Each stop makes another 90° rotation when the transfer pinions are re-engaged, thereby avoiding the stud during a counting process.

3,773,255

FLUID COLLECTION ASSEMBLY FOR RAILROAD ROADBED

Allan P. Schoulties, Highland Heights, Ky., and James C. Schluter, Monroe, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio

Filed Jan. 13, 1972, Ser. No. 217,530
Int. Cl. E01b *21/02*
U.S. Cl. 238—2 **23 Claims**

A metallic, leak proof fluid collection assembly for railroad roadbed wherein apron-like elements are provided in association with each side of the web of each rail and make a fluid tight seal therewith, while being electrically insulated therefrom. Central collector pans in endwise relationship are affixed to those portions of the ties between the rails. Pairs of side collector pans in endwise relationship are affixed to the end portions of the ties outside the rails. Each rail apron is located adjacent one of the side or central collector pans. One or more cross drains, recessed between adjacent pairs of ties and extending transversely of the fluid collection assembly,

may be located at the ends of the central and side collector pans. The rail aprons drain to the collector pans and the collector pans, in turn, drain to cross drains. Each cross drain may be provided with a telescoping sleeve protected by a trash screen and connected to a suitable underground piping system. A plurality of the fluid collection assemblies may be provided in end-to-end relationship to form a continuous fluid collection system.

3,773,256

METHOD OF TEACHING USE OF DRINKING STRAW

Kenneth O. Wright, Mission, Tex.

Continuation of Ser. No. 68,922, Sept. 2, 1970, abandoned.
This application June 14, 1972, Ser. No. 262,597
Int. Cl. A47g *21/18*; G09b *1/00*; F16l *43/00*
U.S. Cl. 239—1 **5 Claims**

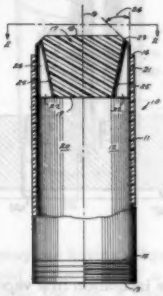
This invention relates to apparatus for teaching infants and young children to use a drinking straw or tube. In particular, it relates to a bifurcated tube in which one leg is placed in an open liquid container and the other terminates in a liquid forcing means e.g., a squeeze bulb. The common leg of the tubing is a delivery leg which conducts liquid to the mouth of a child. In use, the squeeze bulb and its leg are filled with liquid so that a slight pressure on it will inject a small amount of liquid into the child's mouth. Upon swallowing, a suction action will occur and this will cause liquid to be drawn from the container through the liquid leg.

3,773,257

FOUNTAIN NOZZLES FOR GENERATING PLURAL UNAERATED WATER STREAMS

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Filed Nov. 24, 1972, Ser. No. 309,338
Int. Cl. B05b 17/08
U.S. Cl. 239—17 2 Claims



An ornamental fountain nozzle comprises an elongate body which defines therein a chamber having a lower water inlet opening and an upper water outlet opening. A plug is fixedly disposed across the chamber at the outlet opening. The plug has a portion of its length disposed within a portion of the chamber which has walls defining a cylinder of constant cross-sectional configuration and extending from the outlet opening along the chamber for a distance greater than the extent of the plug within the body. The plug has peripheral walls outside the body arranged to define an extension of the cylinder. The junction of the plug peripheral walls with a top surface of the plug is chamfered along the extent of the cylinder extension. A plurality of grooves are formed in the circumference of the plug at intervals along the extent of the cylinder; a substantial portion of the length of the grooves is disposed within the body. The grooves have lower ends which communicate with the chamber at the lower end of the plug, and upper ends which communicate with the exterior of the nozzle only through the plug peripheral walls and the chamfer. The surfaces of the grooves opposite the plug peripheral walls are inclined outwardly from the length of the plug. The plug between the grooves is engaged in surface-to-surface contact with the chamber walls.

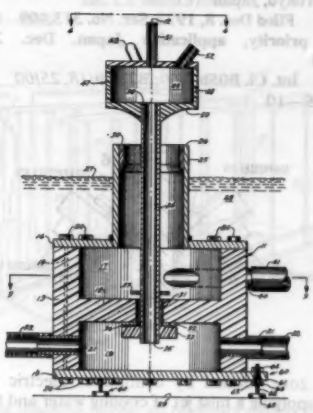
3,773,258

CONTROLLABLE MULTITIER FOUNTAIN

John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corp., Burbank, Calif.

Filed Dec. 11, 1972, Ser. No. 313,990
Int. Cl. B05b 17/08
U.S. Cl. 239—17 10 Claims

An ornamental fountain comprises a housing which defines therein upper and lower chambers separated by a septum. A vertical duct member is connected to the housing to have its lower end in communication with the upper chamber. An open ended tube is disposed within the duct member and extends through the upper chamber and the septem to have its lower end communicating with the lower chamber. The upper end of the tube is disposed above the upper end of the duct member. Water inlet means are provided to the lower chamber. Also, water inlet means are provided to the upper chamber and are arranged with relation to the chamber to produce a spiral flow of water in the upper chamber and along the duct member around the tube to and through the upper end of the duct member.

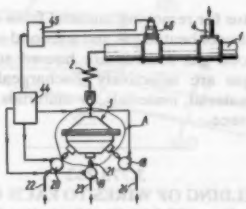


3,773,259

INSTALLATION FOR DETONATION WORKING OF MATERIALS

Anatoly Ivanovich Zverev, Bratislavskaya ulitsa, 26, kv. 22, Kiev, U.S.S.R.

Filed July 12, 1972, Ser. No. 271,202
Claims priority, application USSR, July 2, 1971, 1675700
Int. Cl. B05b 1/24, 17/00
U.S. Cl. 239—81 4 Claims



An installation for detonation working of materials comprising a working chamber communicating with a metering device supplying the material to be treated and with a mixing chamber which prepares the explosive mixture.

The mixing chamber is provided with a lateral partition in which nozzles are installed which improve mixing of the explosive mixture components.

3,773,260

METHOD OF ADJUSTING THE COOLING SPEED OF WELDS

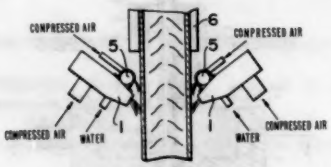
Kazuo Kunioka; Junichi Tanaka; Takao Noguchi; Tsutomu Ikoma; Toyofumi Kitada, and Jinkichi Tanaka, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 8, 1972, Ser. No. 313,409

Claims priority, application Japan, Dec. 20, 1971, 46/103408

Int. Cl. B05b *7/00;* **B23k** *9/18, 25/00*

U.S. Cl. 239—10 **2 Claims**



A weld zone formed by continuous electric welding is cooled by applying a mist jet of cooling water and the cooling speed is adjusted by adjusting the weight ratio of the cooling water to pressurized air utilized to form the mist and by adjusting the velocity of the mist jet.

3,773,261

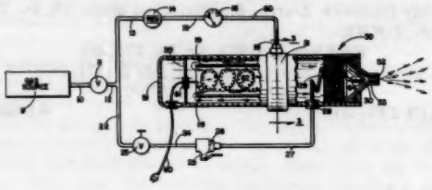
MATERIAL REMOVING DEVICE

Charles J. Helton, Santa Ana, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Division of Ser. No. 833,046, June 13, 1969, Pat. No. 3,661,315. This application July 2, 1971, Ser. No. 165,825

Int. Cl. H05b *3/42*

U.S. Cl. 239—133 **11 Claims**



An apparatus for removing material from a workpiece having a first source of heated gas and a second source of gas. The first and second gas sources are housed such that the two sources of gas are selectively dischargeable to heat and remove the material, materials, or materials and components from a workpiece.

3,773,262

WELDING OF WIRES TO EACH OTHER

Arthur J. Sparling, 638 14th St., Manhattan Beach, Calif.

Continuation of Ser. No. 675,148, Oct. 13, 1967, abandoned. This application Sept. 11, 1970, Ser. No. 71,337

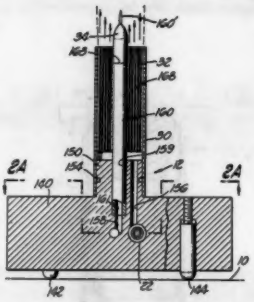
Int. Cl. B05b *1/28*

U.S. Cl. 239—291 **9 Claims**

The invention relates to an improved means and process for welding wires and, more particularly, for welding lead wires to the ends of the magnet wire in small wire coils.

The invention also embraces an improved welding torch using a small-orificed burner tip and providing a sheath of shielding inert gas around the welding flame.

Improved fixture means is likewise provided for tensioning and holding the wires in intimate contact while welding or fusing. The fixturing includes a means holding one wire in tension and coiling the other thereabout. The torch is moved up to the wrapped wires to effect the weld by fusing the wires at a temperature such that the insulation first vaporizes, obviating the need for initial removal of the insulation by other means or methods. The fixture includes rotatable means to bring the two ends of the coil wire into position for making welds to the leads.



3,773,263

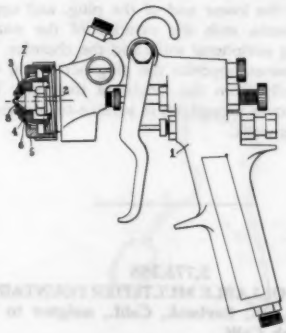
PAINT SPRAY-GUN HEAD

Michel G. Binoche, Paris, France, assignor to S.K.M., Stains, France

Filed Jan. 14, 1972, Ser. No. 217,742

Int. Cl. B05b *1/04*

U.S. Cl. 239—296 **4 Claims**



This atomizing head for paint spray-gun is of the type wherein the front face is designed for utilizing the action of wall effect for directing the lateral air jets and thus wrap and flatten the axial paint jet.

The structure of this head is such that at least one fraction of these lateral jets develops on its front face and symmetrically in relation to its central aperture limiting the axial paint jet, so as to surround same completely.

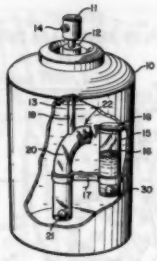
No paint deposit takes place during the operation of this head so that it constantly remains very clean.

3,773,264

PRESSURE ACTUATED TRIGGER ASSEMBLY FOR MIXING DUAL LIQUIDS

Philip J. Cronan, 425 S. Williams Dr., Los Angeles, Calif.

Filed Oct. 24, 1972, Ser. No. 300,213
Int. Cl. B67c 5/56, 5/54; B05b 9/04
U.S. Cl. 239—304 6 Claims



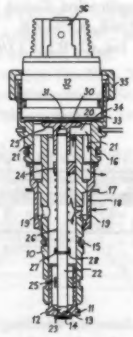
An aerosol type spray can having a liquid under pressure includes a second liquid in the form of a catalyst housed in a second container within the can. A guide tube with a ball is positioned in the can, a portion of the guide tube communicating with the outlet spray nozzle such that actuation of the spray nozzle causes the liquid under pressure in the can to pass up through the guide tube. This action moves the ball through the guide tube, the momentum of the ball striking a trigger which effects removal of the top of the second container so that the catalyst can mix with the liquid in the can.

3,773,265

ELECTROMAGNETIC FUEL INJECTORS

Peter Michael Kent, Rugby, Warwickshire, England, assignor to Brico Engineering Limited, Coventry, Warwickshire, England

Filed Aug. 13, 1971, Ser. No. 171,472
Claims priority, application Great Britain, Aug. 19, 1970, 40012/70
Int. Cl. B05b 1/30
U.S. Cl. 239—585 6 Claims



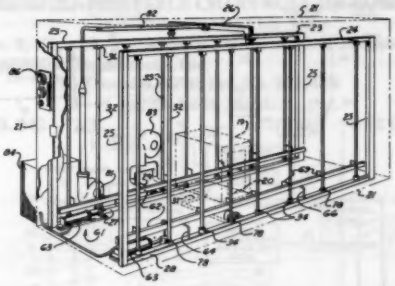
An electromagnetic fuel injector for a fuel injection system is provided with a solenoid winding which, when fed with electrical operating current, produces a saturated magnetic field in at least part of a magnetic circuit, which field is used to attract a member controlling the valve means of the injector and hence the fuel flow. The valve means may include a plunger having a tip portion of a plastics or rubber-like material to engage the valve seat. Methods of attaching the tip portion to the plunger are also described.

3,773,266

WASHING MACHINE INCLUDING OSCILLATORY SPRAY SYSTEM

Robert W. Raefield, Concord, Calif., assignor to Systems Enterprises Inc., Concord, Calif.

Filed Nov. 30, 1971, Ser. No. 203,196
Int. Cl. B05b 3/00
U.S. Cl. 239—243 10 Claims



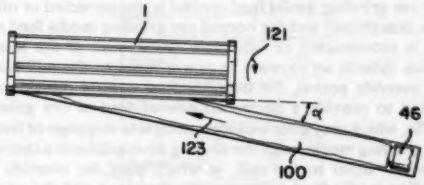
A washing machine having an oscillatory spray system particularly useful in laboratory, hospital and industrial applications is disclosed. A plurality of tubular spray risers are rotatably mounted on a liquid distribution manifold and connected to an oscillating mechanism to impart oscillatory rotation to the risers through an arc about their longitudinal axes during discharge of liquid from nozzles mounted on the risers. A rotary union joining the manifold and risers for flow of liquid therethrough is also disclosed. The oscillating risers are mounted to the manifold and oscillating means for easy removal.

3,773,267

METHOD AND APPARATUS FOR THE COMMINUTION OF WOOD

Karl Schafer, Neu-Bamberg, and Peter Voelskow, Bad Kreuznach, both of Germany, assignors to G. Siempelkamp & Co., Krefeld, Germany

Filed May 14, 1971, Ser. No. 143,497
Claims priority, application Switzerland, May 15, 1970, 7336/70; May 15, 1970, 7334/70
Int. Cl. B27l 11/00
U.S. Cl. 241—28 14 Claims

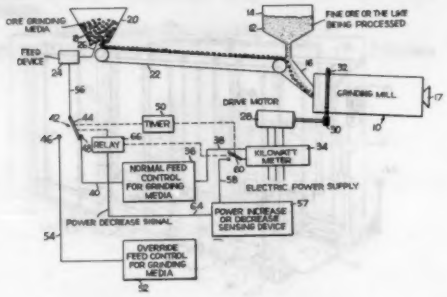


Pointed wood particles for use in the production of pressed board or in the paper or cellulose industries are made by shaving a wood body in the direction generally transverse to a major dimension thereof and inclined at an acute angle to the grain to produce shavings which are thereafter broken up to form the particles. The apparatus comprises a drum whose blades along the exterior are provided with slots through which the shavings pass into the interior of the drum and are conveyed by a worm, belt or flight conveyor within the latter.

3,773,268
APPARATUS FOR AND METHOD OF CONTROLLING FEED OF GRINDING MEDIA TO A GRINDING MILL

Fred C. Bond, Tucson, Ariz., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Feb. 25, 1972, Ser. No. 229,454
Int. Cl. B02c *25/00*
U.S. Cl. 241—30 **8 Claims**

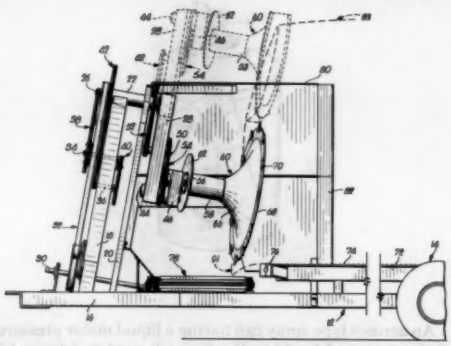


An apparatus for and a method of controlling the feed rate of grinding media to a grinding mill of the type which operates at a power draft in the vicinity of the critical peak power draft of the grinding mill. In the described embodiment, the ore grinding media feed rate to a secondary autogenous grinding mill is controlled. In the described embodiment the ore grinding media feed rate is normally automatically controlled in response to the electrical power demand of the grinding mill by control means whose function is to maintain the power draft of the mill at a predetermined set point. At suitable time intervals, such as once every sixty minutes, the normal automatic feed control for the ore grinding media is interrupted or deactivated and an override feed control for the ore grinding media is substituted in place of the normal feed control. The override feed control acts to substantially decrease the rate of feed of the ore grinding media to the mill sufficiently to cause a measurable effect on the power draft of the mill. During the period when the override control is in effect, the feed of ore grinding media to the mill may even be stopped completely. A sensing device responsive to power increase or decrease detects whether the power input to the mill decreases or increases when the override feed control is in control, thereby indicating whether the mill is loaded below or above the grinding media charge or loading corresponding to the critical peak power draft of the mill. If the sensing device detects a decrease in power input to the mill during the override period, the override ore grinding media feed control is disconnected or otherwise deactivated and the normal ore grinding media feed control is reconnected or otherwise reactivated. If the sensing device detects an increase in power input to the mill during the override period, the override feed control remains connected to provide a decreased rate of feed of ore grinding media, which may even include a complete stoppage of feed of ore grinding media, until the sensing device detects a decrease in power input to the mill, at which time the override ore grinding media feed control is disconnected and the normal ore grinding media feed control is reconnected.

3,773,269
CONTINUOUS STACK FEEDER AND METHOD

Dean P. Brooks, Hesston, and John Dale Anderson, Canton, both of Kans., assignors to Hesston Corporation, Hesston, Kans.

Filed Dec. 20, 1971, Ser. No. 209,599
Int. Cl. B02c *18/00*; **B26d** *1/18*
U.S. Cl. 241—282.1 **13 Claims**

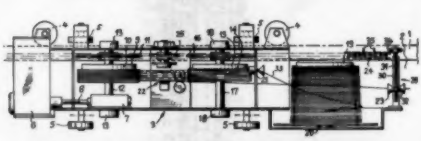


In the continuous feeding from a stack, the entire stack is advanced horizontally without interruption toward a cutter which incessantly slices the material from the leading end of the stack and, at all times as the slice gravitates in a constant flow from the cutter, it is steadily removed at a rate to avoid buildup beneath the cutter, and immediately discharged in a ceaseless stream to a point or area of discharge. In order to effect cutting of the stack throughout its entire transverse cross-sectional area from side to side and top to bottom, the cutter is caused to sweep along a polygonal path that corresponds essentially in shape to the transverse, peripheral configuration of the stack. The cut is on an inclined plane and the cutter opens the kerf as it travels in order to deflect the slice away from the stack, all for the purpose of assuring a steady, uniform gravitation of the cutaway material to a lateral conveyor beneath the cutter. The cutter is also rotated continuously while it sweeps through the stack, and is canted to present a leading bite so as to avoid drag on the stack along the trailing portions of the cutter.

3,773,270
MACHINE FOR WRAPPING TENSIONED ABOUT OBJECTS

Antonio Brandestini, 60, Alte Landstrasse, Zurich, Switzerland

Continuation of Ser. No. 806,622, Feb. 26, 1969, abandoned, which is a continuation-in-part of Ser. No. 496,941, Oct. 18, 1965, Pat. No. 3,452,940. This application Aug. 2, 1971, Ser. No. 168,064
Claims priority, application Great Britain, Oct. 20, 1964, 42,649/64; Feb. 28, 1968, 9,594/68
Int. Cl. B21f *17/00*
U.S. Cl. 242—7.21 **5 Claims**



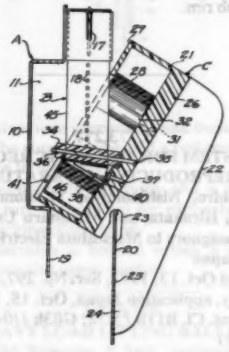
A method and machine for winding tensioned wire material in bands on the external surface of a container. A winding unit having self-driving means and a supply of tensile material is located adjacent a band position by means of a location means attached to the said winding unit, and the unit is displaceably supported by rail means encircling the container. Chain link means or continuous toothed rack element means are fixedly mounted on the radially outer portion of the rail means and provide a form of toothed rack which helps support guide and intermesh with the driving means of the winding unit. One end of the supply of tensile material is secured to the container and the winding unit is displaced about the container to continu-

ously draw off the tensile material from the supply. The force in the tensile material is controlled. To this end, the winding unit is located adjacent a band position by first fixedly or removably attaching a rigid rail track to the wall of the container and thereafter the position of the winding unit relative to the said rigid rail track is adjusted.

3,773,271
SELF-REWINDING MACHINE CONTROL TAPE CASSETTE

Walter F. Brannan, Rolling Hills, Calif.

Filed Mar. 8, 1971, Ser. No. 122,061
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **7 Claims**

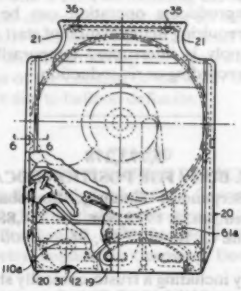


A machine tool tape control includes an endless tape coil rotatably contained in a cassette casing which is mounted directly below the tape-reading head of the machine in an upwardly and outwardly inclined position such that an external loop of the tape leaves the inside of the coil, emerges through a medial slot in the rear side of the casing, and extends directly upwardly to the reading head and thence downwardly and back into the casing through an end opening therein, from which it extends tangentially to the periphery of the roll and is wound externally thereon.

3,773,272
TAPE-CARTRIDGE ASSEMBLY

Robert S. Wallace, Los Angeles, Calif., assignor to Simpac International Inc., Santa Monica, Calif.

Continuation-in-part of Ser. No. 836,204, June 12, 1969, abandoned, which is a continuation of Ser. No. 597,132, Nov. 25, 1966, abandoned. This application June 25, 1971, Ser. No. 156,732
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **19 Claims**

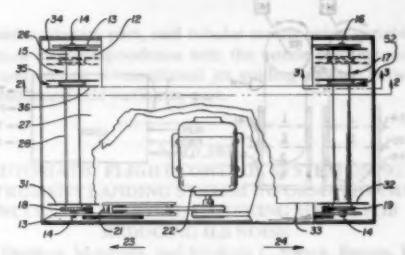


The disclosed magnetic tape cartridge adapted for use with a playback unit incorporates automatically releasable holders to restrain the tape roll, reel and loop against inadvertent displacement when not in use. Additional improvements include substantial reduction in number of parts, the provision of a single-part reel, integral tape pressure pads, a single-part tape cannister, provision for slide-snap-lock assembly, warpage control, and special end grips and a dust cover.

3,773,273
FRICTION ADJUSTABLE CHART ROLL OR PAPER GUIDE APPARATUS

Arvine T. Gosnell, Indianapolis, Ind., assignor to Esterline Corporation, Indianapolis, Ind.

Filed Dec. 28, 1970, Ser. No. 101,448
Int. Cl. B65h *75/24*
U.S. Cl. 242—71.9 **1 Claim**

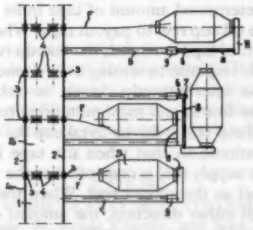


Two parallel rollers with strip chart rolled thereon and extending therebetween, employ fixed guide discs at one side of the chart, and adjustable guide discs at the other side of the chart. Radially projecting buttons in the adjustable discs engage the rollers, being urged inwardly by "O" rings encircling the adjustable discs.

3,773,274
WARP CREEL

Edwin Wildi, Niederuzwil, Switzerland, assignor to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed Sept. 25, 1972, Ser. No. 292,134
Claims priority, application Switzerland, Oct. 7, 1971, 14656/71
Int. Cl. B65h *49/02*; D02h *1/00*; D03j *5/08*
U.S. Cl. 242—131.1 **9 Claims**



A warp creel with substantially parallel supports for receiving respective juxtapositioned or superimposed thread brakes and associated thread guides, and means for moving the packages associated with the thread brakes out of their unwinding position in the package area for the purpose of exchanging such packages together with their package holding devices. The package holding device of each package is supported by a creel part extending between the end of a mounted package and the thread guide and thread brake associated therewith. The package holding device is guided by

the moving means so as to be linearly displaceable at least at the package area of the creel parallel to the axis of a package inserted thereon and away from the thread brake and thread guide and at the end of the aforementioned linear movement externally of the package area such package holding device can be tilted in a vertical plane, preferably through 90°.

3,773,275

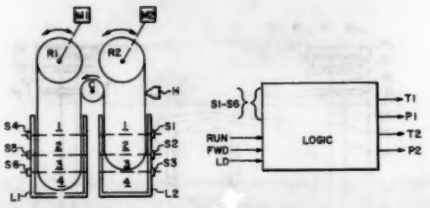
REEL CONTROL FOR A TAPE TRANSPORT SYSTEM

Paul L. Coppa; John J. Marchesani, both of Morristown, and Louis G. Orsatti, Philadelphia, all of Pa., assignors to Mohawk Data Sciences Corporation, Herkimer, N.Y.

Filed July 22, 1971, Ser. No. 165,247

Int. Cl. G11b *15/58*

U.S. Cl. 242—184 **7 Claims**



The tape transport described has a supply reel, a motor for bidirectionally driving the supply reel, a takeup reel, a motor for bidirectionally driving the takeup reel, a capstan located between the supply and takeup reels for feeding the tape, a supply loop box for buffering the tape between the supply reel and capstan, and a takeup loop box for buffering the tape between the capstan and takeup reel. The reels are bidirectionally driven by their respective motors in response to the amount of tape in their associated loop boxes. Each loop box is divided into four zones so that the position of the end of the loop therein corresponds to four successively increasing predetermined amounts of tape. In response to the lowest and first predetermined amount of tape in the supply loop box, the supply reel is rotated to payout tape; in response to a second greater amount of tape occurring in the box, the supply reel is intermittently driven to payout tape. In response to a third amount of tape in the box, the supply reel is allowed to freely rotate and in response to the fourth and maximum amount of tape in the loop box, the supply reel is rotated to takeup the tape. With respect to the takeup reel, the lowest and first predetermined amount of tape in its respective loop box causes the takeup reel to payout tape. When a second and greater amount of tape is sensed, the takeup reel is allowed to freely rotate. In response to sensing a third amount of tape, the takeup reel is intermittently driven to take up tape. In response to the fourth and maximum predetermined amount of tape, the takeup reel is driven to takeup the tape. The transport is bidirectional so that when the tape is being moved backwards the supply reel is controlled as the takeup reel and the takeup reel as the supply reel. When the capstan is not feeding tape in either direction, the amount of tape in each loop is regulated in a manner similar to the way in which the takeup reel is controlled during normal forward tape feeding.

3,773,276

SELF-THREADING LEADER FOR TAPE ROLL

Kingston E. Ganske, Columbus, Ind., assignor to Arvin Industries, Inc., Columbus, Ind.

Filed Oct. 28, 1968, Ser. No. 770,946

Int. Cl. G11b *15/66;* **B65h** *75/28*

U.S. Cl. 242—192 **11 Claims**

A roll of recording tape has a flexible leader attached to its outer end, and the leader has flanges with independently flexible teeth extending to one side and spaced to embrace the outermost layers of the roll. The leader will likewise grip a take-

up hub in a self-threading transport system. The teeth taper inward and can grip the tape pack of can grip into a recess formed in the hub rim.

3,773,277

CONTROL SYSTEM FOR MAGNETIC RECORDING AND REPRODUCING APPARATUS

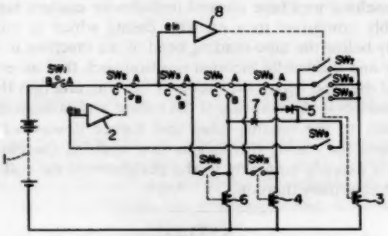
Michinori Nagahiro, Nishinomiya; Toshiomi Yabu, Kyoto; Hiroo Hosono, Hirakata, and Masaharu Ushihara, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 13, 1972, Ser. No. 297,491

Claims priority, application Japan, Oct. 15, 1971, 46/81993

Int. Cl. B11b *15/32;* **G03b** *1/04*

U.S. Cl. 242—201 **2 Claims**



A control system for a magnetic recording and reproducing apparatus of the kind in which a tape is used for recording or reproduction of information. The control system controls the tape movement so that the recording or reproducing operation at a low speed and the fast forwarding or rewinding operation at a high speed can be changed over to each other without requiring manipulation of a stop operation. Further, the recording or reproducing operation can be automatically started without requiring manipulation of start operation even when power supply is interrupted temporarily and is then restored during recording or reproduction.

3,773,278

AERIAL BUOY FOR POSITION LOCATING

Walter Stanley Bergunder, Winnipeg, Manitoba, Canada

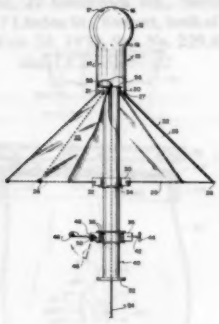
Filed Jan. 3, 1972, Ser. No. 214,881

Int. Cl. B64d *17/00;* **B64c** *39/00*

U.S. Cl. 244—4 **19 Claims**

An aerial buoy including a frusto-conically shaped member, a tubular member extending coaxially therewith and upwardly therefrom, and a longitudinally extending support tube extending downwardly from the frusto-conically shaped member. A propeller and rudder assembly is pivotally con-

nected to the support tube below the frusto-conical member. The frusto-conical and tubular members are collapsible.



A launching structure is provided and includes a guide tube slidable within the support tube and a coil spring for imparting a launching force to the buoy.

A cord is connected to the buoy and a cord storage and dispensing structure is provided for properly feeding cord in response to launching of the buoy.

The entire assembly is housed within a cylindrical cover having a frusto-conical upper section.

3,773,279

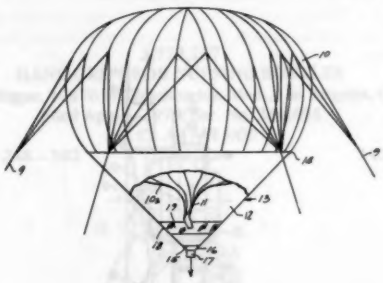
HEAVY LOAD LIFTING BALLOON

Theron E. Wright, Brandon, S. Dak., assignor to Raven Industries, Inc., Sioux Falls, S. Dak.

Filed May 11, 1972, Ser. No. 142,187

Int. Cl. B64b *1/40*

U.S. Cl. 244—31 **9 Claims**



A balloon construction having a general natural shape balloon envelope with a skirt surrounding the lower end and the skirt having ram-air openings catching air from the wind pressurizing the skirt and having the load lines integral with the skirt with the skirt maintaining the tapered shape of the balloon regardless of the collapse of the lower end of the balloon within the skirt due to balloon deflation.

3,773,280

JET DEFLECTING DEVICE

Anton Buchstaller, Friedrichshafen, Germany, assignor to Dornier A.G., Friedrichshafen/Bodensee, Germany

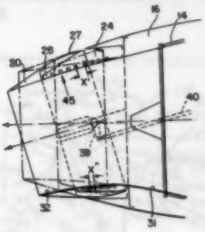
Filed Oct. 27, 1971, Ser. No. 193,094

Claims priority, application Germany, Dec. 23, 1970, P 20 63 342.5

Int. Cl. B64d *27/18*

U.S. Cl. 244—56 **6 Claims**

This invention relates to a jet deflecting device, particularly adapted for deflecting the propellent gas jet of an aircraft jet engine, which comprises pivot bearing means connecting the jet discharge nozzle with a stationary part of the jet engine, and extensible tubular means connected between said nozzle



and said stationary part, said tubular means being variable in curvature in correspondence with the nozzle pivoting movement and having a transitional jet guiding surface between said nozzle and said stationary part.

3,773,281

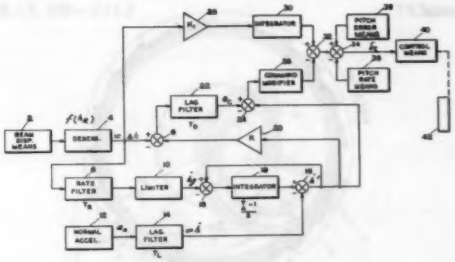
AUTOMATIC FLIGHT CONTROL SYSTEM USING INSTRUMENT LANDING SYSTEM INFORMATION AND INCLUDING INERTIAL FILTERING MEANS FOR REDUCING ILS NOISE

Jerry Doniger, Montvale, and Frederic L. Swern, Bogota, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed June 18, 1971, Ser. No. 154,517

Int. Cl. B64c *13/50*

U.S. Cl. 244—77 A **7 Claims**



A flight control system includes localizer and glide path couplers using instrument landing system (ILS) information and inertially sensed data to generate appropriate control signals, and inertial filtering means for providing significant attenuation of ILS noise to reduce spurious signal generation.

3,773,282

VEHICLE CONTROL SYSTEM

Ronald L. Sands, St. Louis County, and Don L. Young, Jr., Hazelwood, both of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

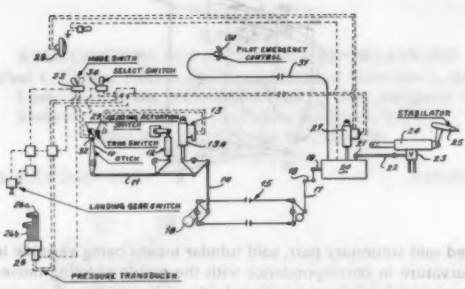
Filed Dec. 27, 1971, Ser. No. 212,313

Int. Cl. B64c *13/2*

U.S. Cl. 244—83 R **6 Claims**

A control system for vehicles capable of travel at high speeds on land, and in the air or water, in which the operator of such a vehicle is provided with means to regulate his capabilities to the loads imposed on the vehicle control surface subjected to a wide range of loads. The system involves a parallel related arrangement of a spring damper device, and a trim actuator and feel spring, with a ratio changer device in se-

ries that operates to provide the operator with a substantially constant control load for "G" forces acting on the vehicle control surface for the full range of surface deflection and throughout the vehicle operating range. The system includes a



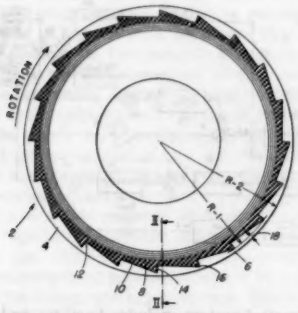
mass which is sensitive to the acceleration of the vehicle and to the normal translation of the vehicle. This gives the operator a way of matching his capabilities to the loads imposed throughout the operating range of the vehicle.

3,773,283

SELF ROTATING AIRPLANE TIRE

Robert Henry Abplanalp, 700 Nepperhan Ave., Bronxville, N.Y.

Filed Mar. 22, 1972, Ser. No. 237,113
Int. Cl. B64c *25/40*
U.S. Cl. 244—103 S **9 Claims**



An aircraft tire is provided with circumferential grooves in the tread face, which grooves include as the floor thereof a series of impeller vanes defined by asymmetrical wedges which present differential resistance to the airstream at vertically opposed locations on the tire to cause the tire to be rotated by the airstream.

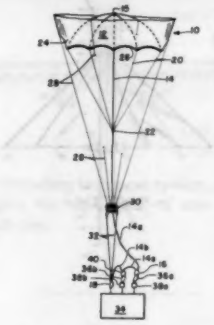
3,773,284

CONTROLLABLE MULTI-STAGE INCREASING DRAG PARACHUTE

Jon T. Matsuo, and Lawrence E. Neipling, both of El Centro, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 25, 1972, Ser. No. 229,414
Int. Cl. B64d *17/08, 17/34*
U.S. Cl. 244—142 **10 Claims**

A multi-stage increasing drag parachute in which the canopy dray area is increased in predetermined controlled increments by means of an integral, variable length centerline, the length of which is controlled at a point remote from the



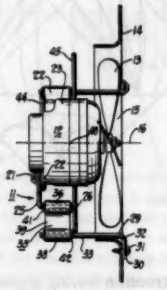
canopy, each deployed canopy increment being self-sustaining as an independent and integral portion of the whole canopy.

3,773,285

FLEXIBLE MACHINE MOUNTING

Wayne J. Morrill, King and Hamsher Sts., Garrett, Ind.

Continuation-in-part of Ser. No. 875,923, Nov. 12, 1969, abandoned. This application Feb. 18, 1972, Ser. No. 227,411
Int. Cl. F16f *15/04*
U.S. Cl. 248—15 **24 Claims**



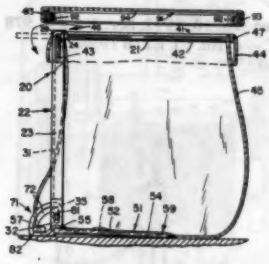
A flexible machine mounting is shown for a dynamo-electric machine which is subject to rotary vibration such as an electric motor energized at 60 Hz and subject to 120 Hz rotary vibration due to the magnetic pulsations. The machine is mounted by rigid links which have collars on opposite ends to surround elastic sleeves in turn surrounding pin members with the inner set of pin members fixed by spokes to the machine and the outer set of pin members fixed by rods to the supporting frame. The two flexible fastening means at each end of the rigid links permits the motor or machine to have a high degree of rotary freedom to permit vibration thereof without transmitting the vibration and noise to the supporting frame. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation on the scope of the claimed subject matter.

3,773,286

COMPACT, FOLDABLE INDOOR AND OUTDOOR BAG HOLDER

Edward M. Govoni, 27 Southwick Rd., North Reading, and Ralph E. Faia, 47 Linden St., Everett, both of Mass.

Filed Feb. 24, 1972, Ser. No. 229,036
Int. Cl. B65b 67/12
U.S. Cl. 248—97 15 Claims



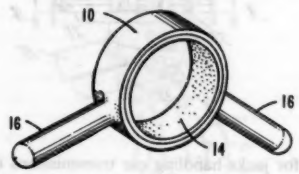
A relatively light weight, low cost holder for supporting the open end of a trash bag indoors, or a larger litter bag outdoors, is made of resilient bar, or wire, material such as steel or aluminum. The upper and lower frames are flat and planar to fold compactly against a vertical channel standard. The upper frame pivots 270° from bag holding position to folded position. The lower frame has a slotted locking plate, and prongs, so that indoors it is a flat, planar base, while outdoors it is an extension of the standard with the prongs thrust in the ground to support a larger plastic bag.

3,773,287

HAND GRIPS FOR NURSING BOTTLES

Al Hechinger, 12676 W. Washington Blvd., Los Angeles, Calif.

Filed Apr. 6, 1972, Ser. No. 241,695
Int. Cl. A47d 15/00
U.S. Cl. 248—102 7 Claims



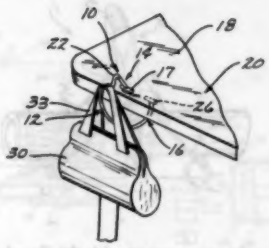
Hand grips to be placed on nursing bottles to assist an infant in holding its own bottle while nursing, and also providing a supporting structure which prevents the bottle from rolling out of reach. The device consists essentially of a ring or band which may be slid over the bottle and removably attached thereto. The band may either be a complete circular ring providing a friction fit or having means for tightening the band onto the bottle, a split ring relying on the spring compression of the band to secure itself to the bottle or partial ring segments may be used with suitable hooks or the like for attachment. The band has at least two laterally projecting legs which are substantially straight, oriented radially with respect to the band and positioned at an obtuse angle.

3,773,288

PURSE HANGER

Charles D. Bolton, Sidney, Iowa

Filed Nov. 13, 1972, Ser. No. 306,358
Int. Cl. A47l 5/00
U.S. Cl. 248—226 R 10 Claims



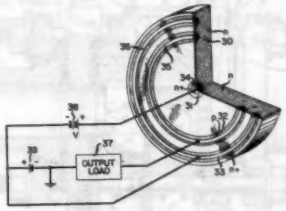
A C-shaped rod member includes upper and lower portions interconnected by a bight portion. The upper and lower portions through transversely extending rod portions engage the top and bottom surfaces of a support. The upper portion extends upwardly and outwardly merging into a shoulder which in turn merges into an outwardly extending ledge on which the straps of a purse or the like may be supported. The ledge then merges into the upper end of the bight portion.

3,773,289

PHOTODETECTOR DELAY EQUALIZER

Detlef Christoph Gloge, Red Bank, N.J., assignor to Bell Telephone Laboratories, Murray Hill, N.J.

Filed June 20, 1972, Ser. No. 264,430
Int. Cl. H01l 15/00
U.S. Cl. 250—211 J 7 Claims



This application discloses a new photodetector with built-in delay for the equalization of the delay distortion produced in multimode optical fibers. The device combines the known advantages of photodiodes and semiconductor delay lines in a single, semiconductor platelet.

3,773,290

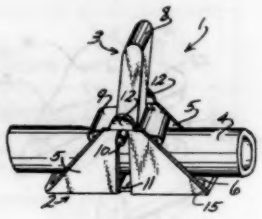
CLAMPING DEVICE FOR A FLEXIBLE HOSE

James E. Mowery, Delavan, Wis., assignor to Sta-Rite Industries, Inc., Delavan, Wis.

Filed June 1, 1971, Ser. No. 148,337
Int. Cl. F16k 7/06
U.S. Cl. 251—9 3 Claims

There is disclosed a clamping device for compressing a flexible hose to preclude flow therethrough. The clamping device includes a channel-section base member and an actuating member operable relative to the base member. The clamping end portion of the actuating member generally extends between the opposed triangular flanges of the base member and is provided with opposed transversely aligned projections

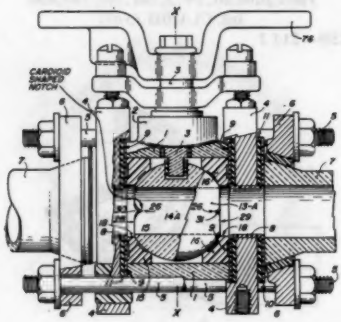
which are engageable within transversely aligned slots of the base member flanges. The apex portion of the triangular flanges flare outwardly to not only facilitate the assembly of the device, but also enable the clamping device to be machine assembled. During assembly the actuating member projections are brought into contact with the flared portions of the base member flanges so that with application of pressure between the base member and actuating member the flanges are forced to elastically spread apart to enable the projections to slide over the corresponding flared portions of the flanges and engage within the opposed slots.



3,773,291
BALL VALVES

Oscar H. Grauer, Warminster, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 30, 1970, Ser. No. 23,917
Int. Cl. F16k *5/06*
U.S. Cl. 251—315 16 Claims

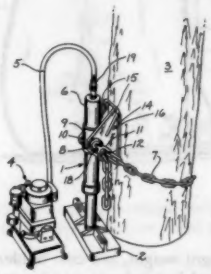


A flow-control glass ball-valve including a glass valve-housing having a valve-chamber therein and an inlet thereto and an outlet therefrom opposite each other, a trunnion-free or pivotless glass valve-ball having a fluid passageway therethrough whose ends operatively register with the inlet and outlet, respectively, when the valve-ball is in its fully open position, said valve-ball being rotatably supported within said chamber without contact with the walls thereof by two circular ball-mounting sealing-rings of Teflon or the like mounted in the valve-housing in operative juxtaposition to the inlet and outlet, respectively, and each ring supportingly contacting a spherical surface of the valve-ball along substantially more than half circle in all positions of the valve-ball about its rotation axis, a ball-turning valve-stem extending through and sealedly journalled in the valve-housing with its axis generally at a right angle to the axis of the inlet and outlet and having a loose operative interconnection with the valve-ball for rotating it about an axis generally at a right angle to the axis of the inlet and outlet and generally limiting its rotation to rotation about said axis, and generally cardioid-shaped radially-extending intersecting flow-affecting edges at an end of said passageway, said intersecting edges being in proximity of the diametral plane of the valve-ball which is generally at a right angle to its axis of rotation and in which the axes of the inlet and outlet lie.

3,773,292
HYDRAULIC POLE JACK

William E. Thiermann, 10726 N. Wauwatosa Road, Mequon, Wis.

Filed Jan. 10, 1972, Ser. No. 216,578
Int. Cl. E21b *19/00*
U.S. Cl. 254—30 5 Claims

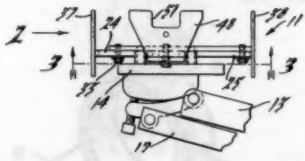


The hydraulic jack has a pole gripping attachment with a swivel chain attachment means operable in a slot therein to provide for chain tightening with minimum piston movement and little or no eccentric loading of the piston. The cylinder is of single acting design with dual tandem spring return. High hydraulic pressure (over 6,000 PSI) is used to facilitate light weight and compact design features.

3,773,293
LIFT SADDLE FOR TRANSMISSION JACK

Lyle L. Arnes, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed Feb. 16, 1972, Ser. No. 226,732
Int. Cl. B66f *3/00*
U.S. Cl. 254—134 6 Claims



A saddle for jacks handling car transmissions in confined spaces beneath the vehicle. The saddle has a rectangular plate with four arms slidable transversely to its edges. Upstanding blades are provided on the arms for supporting the load, the arms being secured in their adjusted position by bolt-and-slot connections.

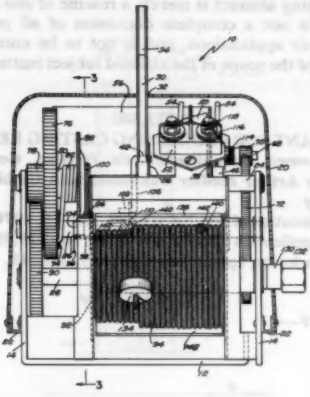
3,773,294
POWERED WINCH

David K. Alcott, Rehoboth, Mass., assignor to Haulamatic Corporation, Riverside, R.I.

Filed Aug. 2, 1971, Ser. No. 167,946
Int. Cl. B65d *1/00*
U.S. Cl. 254—187 3 Claims

A powered winch comprising a motorized clutch drive, an operating lever selectively movable between a hold position in which the motor is deenergized but in which the clutch is en-

gaged; a free position in which the motor is still deenergized but in which the clutch is disengaged; and a haul or wind position in which the motor is energized and the clutch engaged.



Automatic and adjustable stop means are provided for causing movement of the operating lever from haul to hold position after a predetermined amount of cable has been wound.

3,773,295

SAILBOAT BLOCK WITH SHACKLE ADAPTER

Tracy S. Holmes, Santa Monica, Calif., assignor to Tracy Holmes Corporation, Santa Monica, Calif.

Filed July 31, 1972, Ser. No. 276,562

Int. Cl. B66d *1/36*

U.S. Cl. 254—195 **14 Claims**

A sailboat block having a swivel shackle, and an adapter for holding the shackle non-rotatably in different angular positions, as a front shackle, a side shackle, or a diagonal shackle. The adapter comprises a collar which telescopes over the shackle fitting of the block, and two locking fingers on the collar which project into the structure of the block which supports the sheave, and prevent rotation of the collar, and thus of the shackle, relative to the sheave. In one form the collar is simply rectangular, and in another form it has internal notches in its sidewalls.

3,773,296

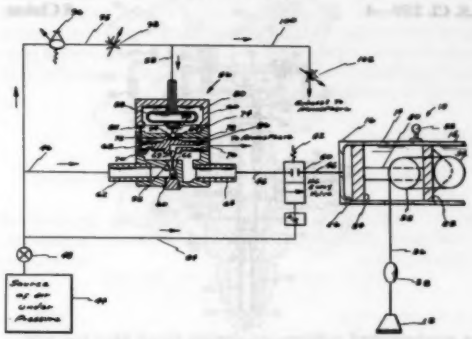
PNEUMATIC BALANCING HOIST

Lorne J. McKendrick, 5131 Surfwood Dr., Milford, Mich.

Continuation of Ser. No. 640, Jan. 5, 1970, abandoned. This application Oct. 8, 1971, Ser. No. 187,870

Int. Cl. B66d *3/08*

U.S. Cl. 254—189 **5 Claims**



A pneumatic hoist for raising, lowering or balancing a variable weight load in a suspended position by regulating air pressure in a power chamber. A hand-held vent valve is employed to select the pressure necessary to balance the weight of each load as it is being raised.

3,773,297

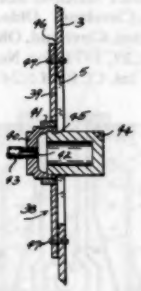
DEVICE FOR FLUIDIZING STORED MATERIAL

Douglas C. Steltz, Brookfield, Wis., assignor to Portec, Inc., Waukesha, Wis.

Division of Ser. No. 858,937, Sept. 18, 1969, Pat. No. 3,656,812. This application Mar. 24, 1972, Ser. No. 237,914

Int. Cl. B01f *3/00*

U.S. Cl. 259—1 **5 Claims**



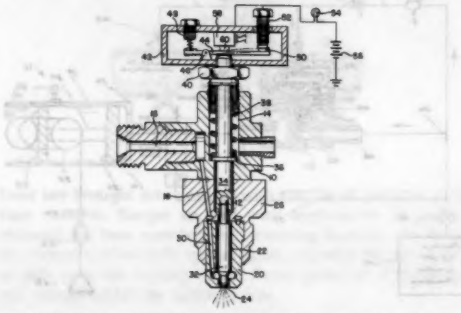
A device for injecting a gas into bulk material stored within a vessel to enhance the flow characteristics of the material. The device includes a housing to be mounted within an opening in the wall of the vessel and having a connection to a source of gas under pressure. The housing supports a porous metal filter element which permits the flow of gas into the material confined within the vessel but prevents the escape of the material into the pressurized gas system. The housing is designed so that it can be attached to the vessel wall entirely from the exterior of the vessel.

3,773,298

PROCESS AND APPARATUS FOR THE PRODUCTION OF PLASTIC MATERIALS AND PLASTIC FOAMS FROM LIQUID REACTIVE CHEMICAL COMPONENTS EMPLOYING MODIFIED INJECTION NOZZLES

Victor L. Gebert, Rua Gurindiba 162, Apt. 104, Rio de Janeiro, Brazil

Filed Mar. 1, 1971, Ser. No. 119,715
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 **8 Claims**



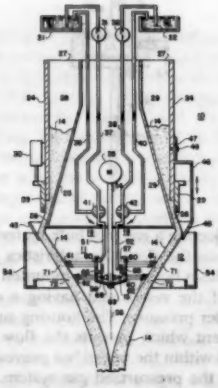
Methods and equipment for eliminating pre- and post-flow of liquid chemical reactants employed in the production of plastic material or plastic foams by injection of each of the reactants through high-pressure nozzles is disclosed. Combination signal/needle valve pressure modified injection nozzles give visual indication of the opening of the needle valves of the injection nozzles for each of the liquid reactants, thereby enabling synchronization of the opening of the valves, and eliminating pre-flow of either of the components. The needle valves of each of the nozzles are closed at essentially the same time by pressure means exerting a pressure on the needle valves of each nozzle, additional to that of the pressure spring which regulates the normal opening pressure thereof, thereby forcing the needle valves of each of the nozzles into closed position at substantially the same instant and eliminating post-flow of either of the components. Alternately, signal nozzles or needle valve pressure nozzles can be used singly to control both pre- and post-flow of either of the liquid components.

3,773,299

FOUNDRY MIXING MACHINE

Edward J. Rebish, Cleveland, Ohio, assignor to Acme-Cleveland Corporation, Cleveland, Ohio

Filed Dec. 27, 1971, Ser. No. 211,925
Int. Cl. B01f *5/24*
U.S. Cl. 259—4 **36 Claims**



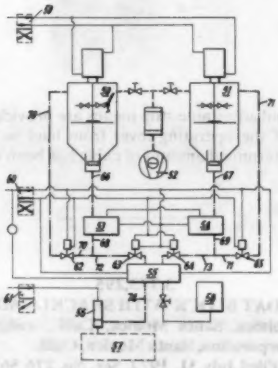
A foundry mixing machine is disclosed for mixing a mold material component with a binder component comprising a rotating rotor means to mix the components by action of centrifugal force. The invention is suitable for use with multi-component binders being able to mix two of the three components by a first mixing means and to mix the remaining component with the mixed components by a second mixing means. The foregoing abstract is merely a resume of one general application, is not a complete discussion of all principles of operation or applications, and is not to be construed as a limitation of the scope of the claimed subject matter.

3,773,300

PLANT FOR PROCESSING CASTING RESIN

Erhard Hauser, Schwalbach/Kreis Wetzlar, Germany, assignor to Arthur Pfeiffer Vakuumtechnik GmbH, Wetzlar, Germany

Continuation of Ser. No. 03,488, Jan. 16, 1970. This application Feb. 22, 1972, Ser. No. 228,084
Claims priority, application Germany, Jan. 18, 1969, P 19 02 486.3
Int. Cl. B01f *15/04*
U.S. Cl. 259—4 **24 Claims**



In a plant for preparing the constituent materials of a casting resin, a premixer forms a chamber for the constituent materials. A pump having a reciprocating piston is located within and at the outlet end of the premixer. The pump has a cylinder with at least one opening for receiving material from the chamber in the premixer. In the pump as the piston completes its suction stroke the opening is uncovered and materials flow into the cylinder and during the exhaust stroke of the piston the materials are discharged from the premixer outlet. The pump piston has a reciprocating rod which extends upwardly through the premixer chamber where it supports and actuates a mixing disk. Metering pumps receive the material from the premixers and deliver it into a final mixer. In the final mixer another reciprocating rod is provided with a mixing element for the final mixing and delivery of the materials to a metering head or a simple casting valve. Valves are provided for controlling and integrating the various operations of the plant.

3,773,301

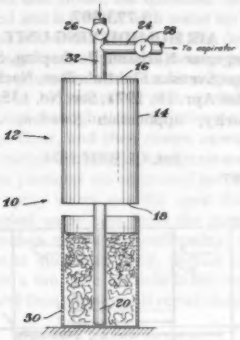
METHOD OF PREPARING ASBESTOS SLURRY

Grafton L. Bergeron, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 2, 1972, Ser. No. 259,293
Int. Cl. B01f *5/00, 13/02*
U.S. Cl. 259—4 **4 Claims**

The invention is a method of preparing a pumpable slurry of asbestos fibers. The fibers are wetted, then placed into a holding tank, suitable liquid also being placed in the holding tank.

The liquid and fibers are then aspirated into an enclosed mixing chamber and air is moved from the holding tank through the liquid and fibers in the mixing tank. The liquid-fiber mixture is then recycled to the holding tank and the



aspirating-air movement, recycling procedure repeated several times until the slurry is completely mixed.

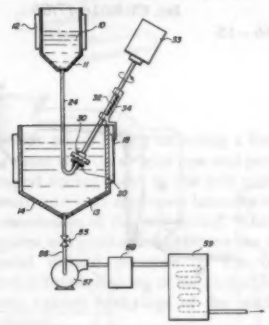
This slurry preparation method eliminates health hazards, doesn't break up the asbestos fibers as do bladed mixer devices, and provides a very well mixed slurry.

3,773,302

APPARATUS FOR MAKING COUPLER DISPERSIONS

Benjamin Allen Johnson; Stephen L. Royal, and Robert A. Ackerman, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 28, 1971, Ser. No. 166,897
Int. Cl. B01f *5/12, 7/10*
U.S. Cl. 259—22 **4 Claims**



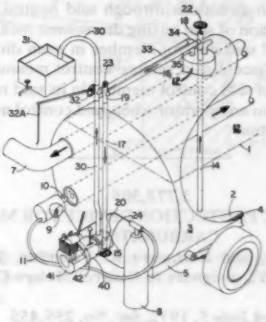
A method and apparatus relate to mixing solutions in which a well-stirred coupler/coupler solvent mixture is fed through a tube to an annular, flow-restriction plate arranged within an aqueous gelatin bulk mixture. A rotatable impeller is mounted in spaced relation to the plate and pumps the gelatin bulk mixture through the central opening or aperture in the plate and into the gap between the plate and the impeller. The impeller is provided with a number of concentric recesses interconnected by radial slots forming a circuitous path to the peripheral edge thereof. The flows of coupler/coupler solvent and gelatin bulk mixture are broken up by the radial slots and the annular recesses in conjunction with the fluid shear developed at the peripheral edge of the impeller.

3,773,303

METHOD AND MEANS TO OPERATE PUMPING SYSTEM

James E. Griffith, 3069 Aries Ct., Cincinnati, Ohio

Filed Oct. 26, 1971, Ser. No. 192,045
Int. Cl. B28c *5/06, 5/42, 5/46;* B01f *5/14*
U.S. Cl. 259—147 **3 Claims**



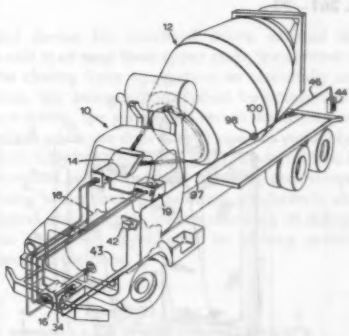
Hot and cold liquid molten congealable hydrocarbons are mixed and otherwise prepared for pumping by a conduit and pump system for pumping such liquids (e.g., hot asphalt). The system is cleaned by reversing the direction of the asphalt pump to thereby pass air reversely through the pump and the lines handling the asphalt, returning the asphalt to the place from whence it has been withdrawn. Air is pumped through the system prior to asphalt pumping to mix the hot and cold asphalt.

3,773,304

CONTROL FOR VEHICULAR CONCRETE MIXER

Patrick William Egerton Hodgson, London, Ontario, Canada, assignor to London Concrete Machinery Co., a division of Hodgson Machine & Equipment Ltd., London, Ontario, Canada

Filed July 20, 1972, Ser. No. 273,402
Claims priority, application Canada, Apr. 17, 1972, 140197
Int. Cl. B28c *5/42*
U.S. Cl. 259—177 A **5 Claims**



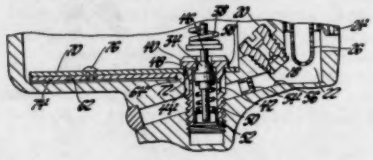
This invention relates to a concrete mixer comprising a body; a rotatably mounted mixer on said body; a hydraulic motor for rotating said mixing drum; a reversible pump for supplying hydraulic fluid to said hydraulic motor; a control member for said reversibe pump operable in opposite directions from a neutral position in which said pump is inoperable to institute delivery of fluid from said pump in opposite directions at a rate dependent upon the amount of

movement from said neutral position; an electric motor operable to give rotational output in both directions; remote control means for said electric motor manually operable to operate said electric motor in either direction of rotation at a desired cumulative amount; a transmission for connecting the rotational output of said motor to said control member for said reversible pump whereby said control member can be operated in both directions through said neutral position to control the rotation of said mixing drum; limit means for limiting the travel of said control member in each direction; and signal means adjacent said remote control means responsive to the location of said control member in its said neutral position to indicate to an operator when said control member is in said neutral position.

3,773,305
CATHODIC PROTECTION DEVICE FOR MARINE CARBURETORS

Earl R. Fischer, and Rushmore R. Valentine, Jr., both of Rochester, N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed June 5, 1972, Ser. No. 259,455
Int. Cl. F02m *17/40*
U.S. Cl. 261—72 R **2 Claims**

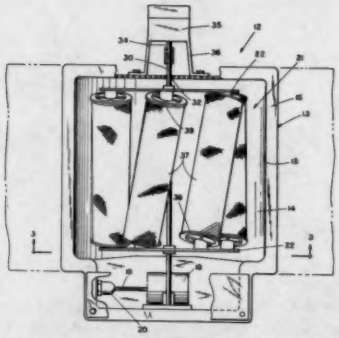


A cathodic protection device for marine carburetors wherein the gasket for the power valve of the carburetor is made of a conducting material, such as aluminum, with a sacrificial cathode material secured thereto.

3,773,306
HUMIDIFYING APPARATUS

Michael B. Duquet, 548 Gregory Dr., Chicago Heights, Ill.

Filed July 21, 1971, Ser. No. 164,732
Int. Cl. B01f *3/04*, *7/12*
U.S. Cl. 261—92 **7 Claims**

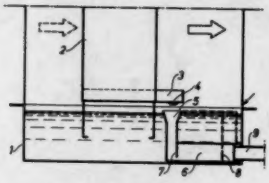


A humidifying apparatus for installation in a warm air heating system includes a housing having a water chamber open at its upper end. A pair of spider elements are supported for rotation on the housing over the opening. A plurality of tubular evaporator elements are pivotally and removably connected to the spider elements and during rotation of the spider elements are immersed in the water chamber, emerge therefrom, and are moved into the path of heated air forced through a heating duct.

3,773,307
AIR HUMIDIFYING UNIT

Tord Herlog Ingemar Karlsson, Jonkoping, Sweden, assignor to Aktiebolaget Svenska Flaktfabriken, Nacka, Sweden

Filed Apr. 19, 1971, Ser. No. 135,061
Claims priority, application Sweden, Apr. 17, 1970, 5346/70
Int. Cl. B01f *3/04*
U.S. Cl. 261—97 **4 Claims**

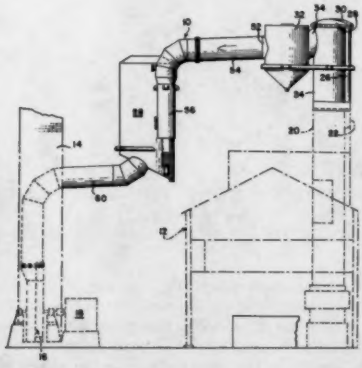


Air humidifying unit of circulation water type, having an air humidifier arranged over a basin for collection of the circulation water, part of said water being continuously tapped off to limit the content of salts and impurities in the water, said basin having a spillway furnished with water-trap to prevent air communication with the environment, the tapped water being led off through the water-trap of the spillway, whereby this water-trap serves also as outlet for the tapped water.

3,773,308
GAS QUENCHER-SCRUBBER AND WATER SEAL APPARATUS FOR HOT PARTICLE-LADEN GAS SOURCES

Walter R. Allen, Jr., Ringoes, N.J., assignor to Research-Cottrell, Inc., Bridgewater Township, N.J.

Filed June 26, 1972, Ser. No. 266,257
Int. Cl. B01d *47/06*
U.S. Cl. 266—15 **7 Claims**



In a twin foundry furnace cupola arrangement, as an exemplary environment, a cylindrical, vertically oriented, quencher having generally a conical floor is divided into two sections by a diametrical baffle upstanding from the floor to a point about half the height of the quencher and to the bottom of a horizontal gas outlet located in the side of the quencher, each section formed by the diametrical baffle having an inlet for gases from

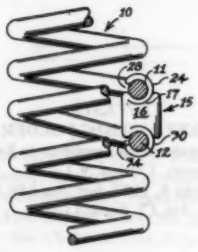
its associated cupola and being segmented by a vertical baffle that extends downwardly therein to a point adjacent to and spaced from the floor and below the top of the diametrical baffle. Each section has overhead spray nozzles to spray water down onto the baffles and onto the gases and each section has its own floor drain.

With one cupola shut down, the quencher section therefor has its drain closed and it is filled with water up to the level of the gas outlet and above the bottom of the downwardly extending baffle so as to seal off the gas passage to such cupola. Hot particle-laden gases from the functioning cupola enter its quencher section to be saturated with water, drawn down under the baffle and through the restrictive passage between the baffle and the floor, and then drawn upwardly in turbulence to the gas outlet so that the temperature of the gas is lowered and larger particles are separated out therefrom to be carried with the spray water out the open floor drain. The scrubbed and cooled gases pass from the quencher through the outlet via conduit means to, preferrably, a fine particle scrubber, to a mist eliminator and, thence out a chimney under the draft of a fan. The particle-laden water flows to a separation tank and then the water is recirculated.

3,773,309
COIL SPRING SPACER

Warren E. Carter, Murfreesboro, Tenn., assignor to Perfect Equipment Corp., Murfreesboro, Tenn.

Filed May 30, 1972, Ser. No. 257,778
Int. Cl. F16f *1/16*
U.S. Cl. 267—61 S **9 Claims**



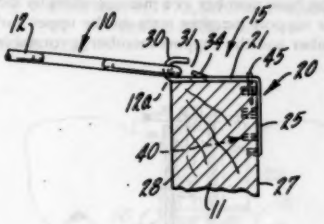
A spacer device for a coil spring including a hard resilient body having an arcuate seat on at least one end portion of the body and a U-shaped socket fixed to the end portion of the body to span the arcuate seat and open laterally of the body for receiving a convolution of the coil spring. When both end portions of the spacer are positioned between the spring convolutions, the axial inward pressure of the convolution received in the socket forces one leg of the socket into the seat and simultaneously causes both legs of the socket to flex around the convolution.

3,773,310
SPRING CONSTRUCTION

Lawton H. Crosby, Lake Bluff, Ill., assignor to Morley Furniture Company, Chicago, Ill.

Filed Sept. 30, 1971, Ser. No. 185,196
Int. Cl. F16f *3/02*
U.S. Cl. 267—110 **30 Claims**

Rail attachment arrangements for attaching the ends of a sinuous spring band to the rails of a furniture seat frame. The attachment arrangements include clips which facilitate rapid and accurate positioning on a frame rail. The clips can be

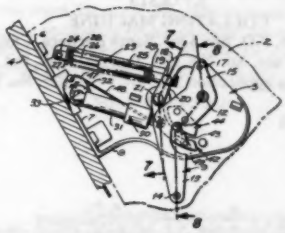


fastened with little or no stapling or nailing, yet will not pull out. The clips provide rail top and "drop rail" spring band connections.

3,773,311
OVERHEAD DOOR CONTROL DEVICE

Lloyd Richard Poe, Los Angeles, and Bernard W. Henrichs, Northridge, both of Calif., assignors to Hartwell Corporation, Los Angeles, Calif.

Filed Sept. 27, 1971, Ser. No. 183,810
Int. Cl. F16f *5/00*
U.S. Cl. 267—114 **13 Claims**



A control device for overhead doors, pivoted about a horizontal axis at or near their upper ends, the control supplementing the closing force to produce an essentially constant closing force, this being accomplished by compound levers backed by a spring, the spring and levers occupying an overcenter position when the door is fully open to yieldably retain the door in its fully open position, and the control also including an extensible and retractable damping means operable, during closing movement, to maintain a relatively slow but constant speed, the damping means releasing its damping resistance, as the door approaches its closing position, to facilitate latching the door.

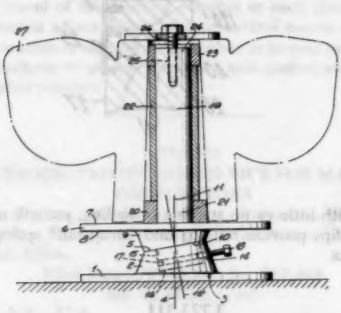
3,773,312
PROPELLER POSITIONING DEVICE

Frank Victorino, Lakewood, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed July 14, 1972, Ser. No. 271,748
Int. Cl. B23q *1/04, 1/12*
U.S. Cl. 269—50 **4 Claims**

A propeller positioning device comprises a table mount comprising a base member of substantially cylindrical configuration having an under surface substantially perpendicular to the axis thereof and an upper surface transverse to the axis

thereof. A table has a substantially planar upper surface, an under surface and a substantially cylindrical support member coaxially affixed to the under surface thereof and having a substantially planar under surface transverse to the axis thereof. A rotating device rotatably mounts the support member on the base member in a manner whereby the under surface of the support member rests on the upper surface of the base member and the support member is rotatable about



an axis of rotation perpendicular to the under surface of the support member and the upper surface of the base member so that the table assumes different inclinations corresponding to the rotation of the support member on the base member. A spindle for accommodating a propeller is affixed to the upper surface of the table and extends perpendicularly therefrom and coaxially with the support member.

3,773,313

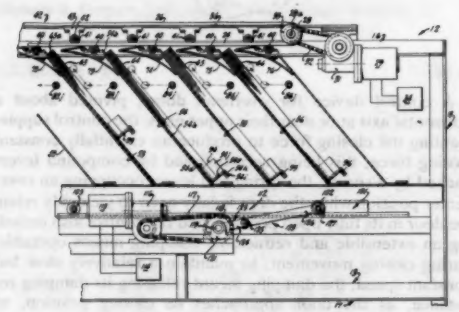
COLLATING MACHINE

Ernest D. Bassett, P.O. Box 5363, Santa Barbara, Calif.

Division of Ser. No. 795,153, Jan. 30, 1969, Pat. No. 3,580,563. This application Feb. 18, 1971, Ser. No. 116,502

Int. Cl. B65h *39/02*

U.S. Cl. 270—58 **3 Claims**



A horizontal elongated framework carries a plurality of transverse, inclined, parallel, paper-supporting racks. A conveying system of the machine, including a belt, transports sheets of paper emerging from a reproduction apparatus into predetermined ones of the racks. After the desired number of sheets have been placed in the racks in the appropriate sequence, various adjustments are made to the machine, including reversal of belt movement, enabling the machine to collate the sheets of paper previously assembled in the racks. The collating mechanism includes structure enabling the operator to adapt the machine to varying paper sizes, textures and weights.

3,773,314

MACHINE FOR CUTTING AND FOLDING SHEET MATERIAL

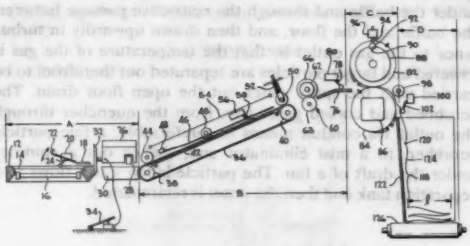
Michel Giovannini, Paris, France, assignor to La Cellophane, Paris, France

Filed Dec. 22, 1971, Ser. No. 210,859

Claims priority, application France, Jan. 7, 1971, 7100338

Int. Cl. B65h *45/16*

U.S. Cl. 270—63 **9 Claims**



A machine for cutting and folding sheet material in a predetermined format including a first section for transversely cutting the sheet material to provide leading and trailing edges therefor, a second section for longitudinally cutting the sheet material, a third section for providing the longitudinally cut sheet material with alternately oriented creases, a fourth section for packing the creased sheet material in an accordian-like strip along the creases, and a fifth section for folding the accordian-like strip twice upon itself to form the predetermined format.

3,773,315

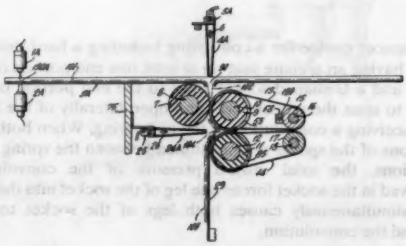
SHEET AND BAG FOLDER

Hsue C. Tsien, Livingston, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed June 4, 1971, Ser. No. 150,099

Int. Cl. B65h *45/00*

U.S. Cl. 270—69 **4 Claims**



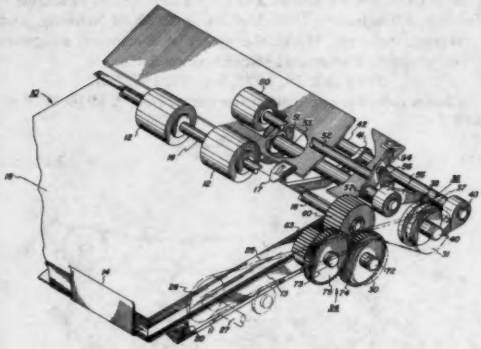
A machine which imparts four folds to flattened plastic refuse bags and the like is characterized by a plurality of adjacent feed stations to which the bags are fed simultaneously and from each of which station the bag receives two folds; and a transport system which includes a mechanical time delay, which feeds the double-folded bags in series to a single station from which two additional folds are imparted. The mechanism for each fold comprises an air knife having a uniform pressure profile along the length of its air gap in combination with a pair of rollers having fixed and floating bearings, respectively.

3,773,316

SHEET FEEDER DRIVE MECHANISM

Denis J. Stemmle, Williamson, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 22, 1972, Ser. No. 255,355
Int. Cl. B65h *3/06*; F16h *55/18*
U.S. Cl. 271—22 20 Claims



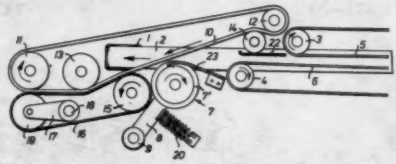
A drive mechanism for controlling the separating and forwarding function of a sheet feeding device for imparting an asynchronous multi-directional motion to the sheet feeding mechanism for accomplishing reverse buckle feeding of individual sheets from a stack.

3,773,317

UPRIGHT CONVEYING DEVICE FOR FLAT ITEMS

Karl-Heinz Kummerer, Konstanz, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Feb. 28, 1972, Ser. No. 229,723
Int. Cl. B65h *3/04*, *3/52*
U.S. Cl. 271—34 4 Claims



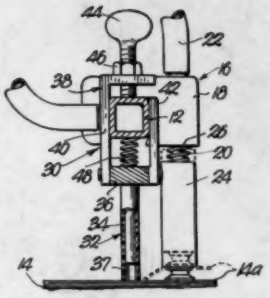
A retaining roller in an upright conveying device has a friction coating and is mounted on a rocker arm, adjacent the path of movement of items through the device, for rotation in a direction opposite to that of the conveying direction. The roller is maintained in a predetermined space relationship with a lateral border surface by a pressing force acting against the arm to urge the roller to an abutment position where the peripheral surface of the friction coating rests against a support roller.

3,773,318

SHEET FEEDER SUCKER AND HOLD DOWN ASSEMBLY

Donald A. Glaser; Bud W. Dunn, and John C. Underwood, Emporia, Kans., assignors to Didde-Glaser, Inc., Emporia, Kans.

Filed Nov. 8, 1971, Ser. No. 196,654
Int. Cl. B65h *3/08*
U.S. Cl. 271—106 5 Claims



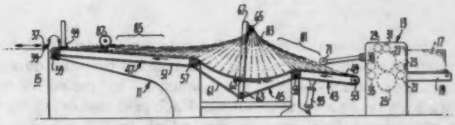
A sheet pickup assembly has hold-down fingers associated therewith which remain in a stationary condition to press lightly against a stack of sheet stock directly behind the vacuum suckers of the assembly during attachment of the suckers to the top sheet in the stack and retraction of the suckers away from the stack. The simultaneous upward sucker retraction and stationary finger pressure forces the top sheet to flex, such that the next sheet therebelow is prevented from adhering to the top sheet for pickup therewith.

3,773,319

CORRUGATED SHEET INVERTING MACHINE

John M. Hottendorf, Mountain View, and Chester E. Harshman, Milpitas, both of Calif., assignors to Fabcor Industries, Inc., Mountain View, Calif.

Filed Dec. 16, 1971, Ser. No. 208,619
Int. Cl. B65h *1/22*
U.S. Cl. 271—151 6 Claims



A technique for reverse shingling a stream of shingled sheets that is especially adapted for feeding corrugated box sheets from a printer to a die press. A slack conveyor belt section pivots the individual sheets about an elongated support roll held stationary above the slack conveyor belt in order to invert the individual sheets.

3,773,320

POGO STICK WITH ADJUSTABLE SPRING BIAS

David Samiran, 148 Northwest Road, and Arthur H. Moore, 46 Northwest Road, both of Westfield, Mass.

Filed Nov. 29, 1971, Ser. No. 202,831
Int. Cl. A63b *25/08*
U.S. Cl. 272—57 E 21 Claims

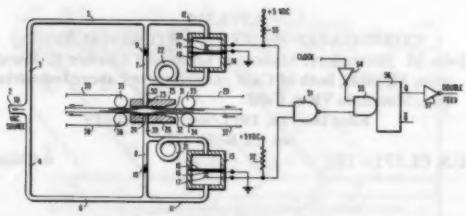
The specification discloses a pogo stick in which the spring is adjustable and which includes a latch which will hold the stick in collapsed position and which can be selectively released to permit operation of the stick. The spring can be adjusted manually or automatically.

3,773,321

OVERLAPPED DOCUMENT DETECTOR

Frank P. Burroughs, Kensington, Md., assignor to Optical Recognition Systems, Incorporated, Reston, Va.

Filed Jan. 11, 1972, Ser. No. 217,004
Int. Cl. B65h *7/12*
U.S. Cl. 271—57 8 Claims



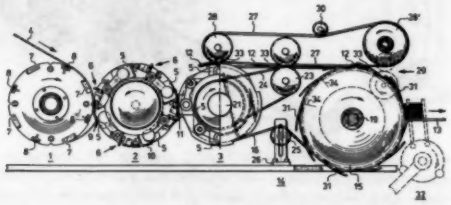
An apparatus and method for detecting overlapped documents in which documents are transported between normally open port means which are connected by means of fluid passageways to a vacuum source. Each port means is a part of a continuous fluid loop circuit which includes a pressure responsive switch means and which is closed to the atmosphere except for the normally open port means. When a document passes between the port means, it is attracted against one or the other of the port means thereby closing that port means, causing the fluid loop of which that port means is a part to become completely closed to the atmosphere, and causing the pressure responsive switch means in that fluid loop to change state. Circuit means are connected to both of the switch means to determine when they are in the changed state simultaneously. Included in the circuit means is circuitry for insuring that the switch means are in the changed state simultaneously for a predetermined minimum period of time before an output indication is produced, thereby eliminating false output indications which may be produced by documents which are wrinkled.

3,773,322

PROCESS AND APPARATUS FOR THE REMOVAL OF SOFT OBJECTS, ESPECIALLY CELLULOSE TISSUES

Johann Schlagbauer; Otto Maulhardt, both of Schwaig, and Werner Schmitt, Heroldsberg, all of Germany, assignors to Vereinigte Papierwerke Schickedanz & Co.

Filed Oct. 29, 1971, Ser. No. 193,866
Claims priority, application Germany, Dec. 9, 1970, P 20 60 498.2
Int. Cl. B65h *29/20*
U.S. Cl. 271—80 2 Claims



A machine for forming and delivering cellulose tissues by cutting and folding several juxtaposed layers and then delivering the tissues to a collecting device. Means are provided for conveying tissues from the folding cylinders to a conveyor at one speed in horizontal position and delivering the formed tissues in a vertical position at a relatively lesser speed to the collecting device.

ERRATUM

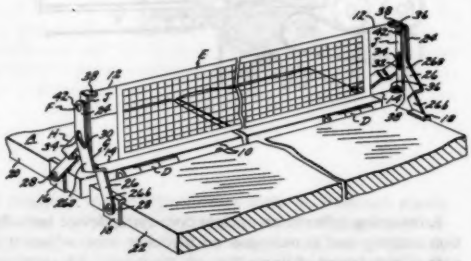
For Class 272—57 E see:
Patent No. 3,773,320

3,773,323

TABLE TENNIS NET SUPPORT ASSEMBLIES

August Mirand, 6133 Carpintero, Lakewood, Calif.

Continuation-in-part of Ser. No. 179,802, Sept. 13, 1971, abandoned. This application Dec. 4, 1972, Ser. No. 311,822
Int. Cl. A63b *39/00*
U.S. Cl. 273—30 7 Claims



A pair of net support assemblies that are permanently secured to the two rectangular playing surface defining sections on a hinged tennis table. The assemblies are of such structure that they automatically dispose a net in a vertical

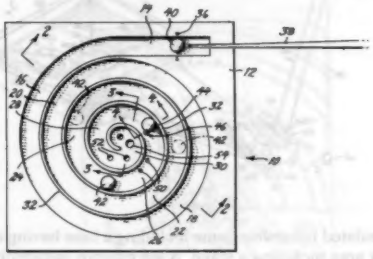
transverse position when the two sections with which they are associated are pivoted from second positions where they are situated back-to-back for storage purposes, to a first position where the sections are axially aligned in a horizontal plane for playing purposes. The assemblies at all times remain connected to the table, and the possibility of either the net or the support therefor being inadvertently mislaid, lost or otherwise separated from the table is eliminated.

3,773,324

POCKETED BALL GAME

Raymond Haines, Jr., Forked River, N.J., assignor to Fairview Development Service, Inc., Forked River, N.J.

Filed July 6, 1971, Ser. No. 159,908
Int. Cl. A63f 7/14
U.S. Cl. 273—123 R 6 Claims



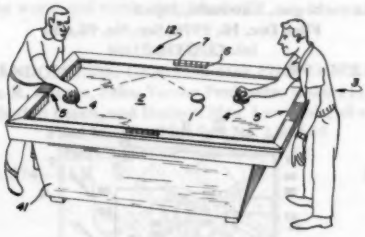
The game includes a flat substrate having a spiral track for a propelled ball adapted to contact a score ball and cause the latter to move along said track to a position where a score may be indicated.

3,773,325

AIR CUSHION TABLE GAME

Phillip E. Crossman, Ada; Robert C. Kenrick, Grand Haven, and Robert W. Le Mieux, Spring Lake, all of Mich., assignors to The Brunswick Corporation, Skokie, Ill.

Filed Sept. 13, 1971, Ser. No. 179,659
Int. Cl. A63f 3/00
U.S. Cl. 273—126 A 5 Claims



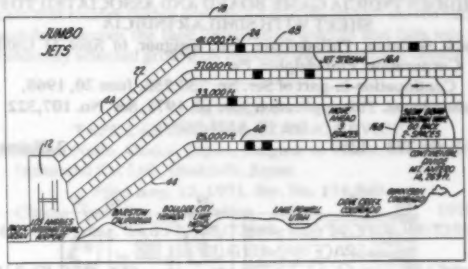
Invention is a game to be played on an air cushion table of specific design. The table includes an air bed or perforated surface to which air under pressure is supplied from below creating a multiplicity of closely spaced air jets upon which a game puck floats without touching the table surface. The table is bounded by a sturdy steel bumper rail which imparts a solid rebound to the puck. Each player is provided with a disc shaped bat which he slides across the table surface and into contact with the puck. An automatic scoring system is provided to receive and record the passage of pucks not blocked by the defending player, including means to inactivate the air bed upon completion of the game.

3,773,326

BOARD GAME APPARATUS

Edwin R. Thiele, 23048 Canzonet St., Woodland Hills, Calif.

Filed Aug. 18, 1971, Ser. No. 172,837
Int. Cl. A63f 3/00
U.S. Cl. 273—134 C 5 Claims



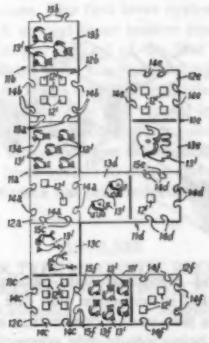
A travel game utilizing a game surface having indicia thereon which represent a profile of a planetary surface and the space above with travel routes delineated in the said space. Position pieces are moved along the travel routes in response to chance means that determine the number of spaces moved by a player's position piece during his turn. Action areas are delineated on the game surface with two or more of the travel routes passing through a given action area. If a player's position piece lands in an action area, the player receives a penalty or an advantage which is determined by the particular route he is following. Certain of the position spaces along the travel routes are delineated as cruise spaces and the player is required to follow the instructions on a cruise card if his position piece lands on a cruise space.

3,773,327

DOMINO-LIKE GAME PIECES

Thomas Kremer, 25 St. James's Gardens, Holland Park, London, England

Filed Feb. 10, 1972, Ser. No. 225,144
Claims priority, application Great Britain, Feb. 12, 1971, 4,608/71
Int. Cl. A63f 9/20
U.S. Cl. 273—137 C 1 Claim



Apparatus for playing a game, in which domino-like members are arranged in abutted relationship by matching a visible symbol on one member with a visible symbol on another member, consists of a set of domino-like members each having

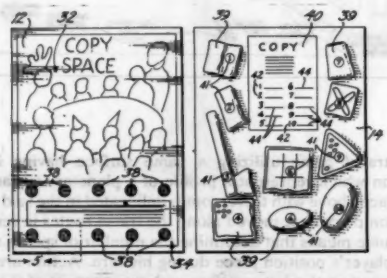
two parts, each part bearing a visible symbol and mating elements individual to the symbol borne by the part whereby during the game the correctness of matching is checked by whether the mating elements of the two matched parts will cooperate. One part has mating elements on three sides.

3,773,328

HIDDEN INDICIA GAME BOARD AND ASSOCIATED TOY SHEET WITH SIMILAR INDICIA

Jack Seidman, Philadelphia, Pa., assignor to Spot O Gold Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 738,538, June 20, 1968, abandoned. This application Jan. 18, 1971, Ser. No. 107,322
Int. Cl. A63f *3/08*
U.S. Cl. 273—139 **3 Claims**



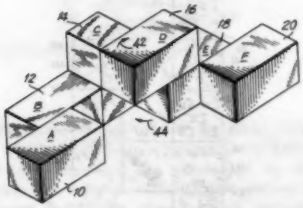
A package including a game board and a prize board having toys secured thereto. The front face of the game board is provided with a pictorial representation and individual bits of informational printed matter. The informational printed matter is correlated to the toys secured to the prize board. Each of the individual bits of informational printed matter is covered by easily removable means. The obscured printed matter, once uncovered, will indicate the toy that a player has won.

3,773,329

SOLID-GEOMETRICAL PUZZLE AND FURNITURE ARRANGEMENTS

Michael Secter, 305 Canal St., New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,429
Int. Cl. A63f *9/08*
U.S. Cl. 273—153 R **8 Claims**



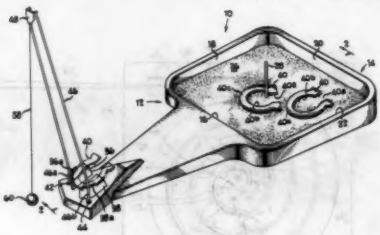
Six similar and elongated right-parallelepiped parts are pivotally connected in sequence with one connection in the sequence being a side-to-end connection and the balance of the connections being side-to-side connections. The parts so arranged that they can be cooperatively and collectively brought into a single larger right parallelepiped configuration. During the various movements, two of the parts may have to pass through positions of interference with each other. To overcome this difficulty, provision is made for one or more of the connections to be yieldably displaceable or a portion of one or more of the parts to be removed. If the solid-geometrical configuration is to constitute a puzzle, the displaceable connection is concealed; if the configuration is to be used for furniture, the displaceable connection can be omitted along with one or more of the parts. In either case, additional parts may optionally be employed.

3,773,330

PENDULUM HORSESHOE PROJECTOR AND TARGET

Marvin I. Glass, Chicago, and Gordon A. Barlow, Evanston, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Aug. 9, 1971, Ser. No. 170,134
Int. Cl. A63b *71/02*
U.S. Cl. 273—100 **2 Claims**



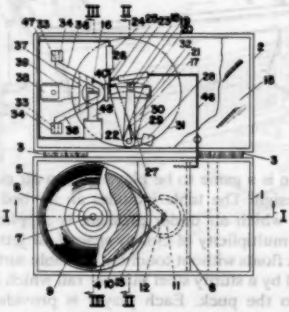
A simulated horseshoe game including a base having a simulated pit area including a stake. A leg extends outwardly from one side of the base with a horseshoe launching area on the leg and a pendulum-like launching member suspended from a support above the launching area. Below the pendulum-like launching area are a pair of rounded abutments of the same curvature as the rounded, bar-like portion of a horseshoe playing piece for matingly receiving and orienting the rounded portion of the horseshoe-like playing piece. The support includes a member having a keyhole-like opening therein and the pendulum-like launching member is supported by a chain-like member having spaced apart enlarged and reduced portions to enable the launching member to be lengthened and shortened.

3,773,331

TOY PHONOGRAPH

Katsumi Watanabe, 801, Oaza Hoshida Katana-cho, Kitakawachi-gun, Kawasaki, Japan

Filed Dec. 16, 1970, Ser. No. 98,680
Int. Cl. G11b *25/04*
U.S. Cl. 274—9 R **3 Claims**



A toy phonograph comprising a box structure and cover member pivotally secured thereto so that the latter may be

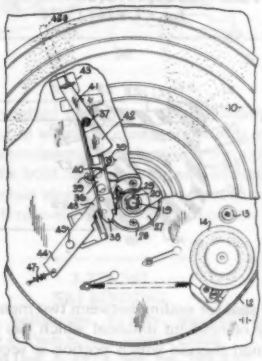
opened or closed as desired, said box structure having provided therein a motor-driven turntable, and said cover member having provided therein a pickup, a speaker and other like elements, wherein arrangement is made such that when said cover is opend, the pickup is returned, and when the cover is closed an electric current is relayed to start rotation of the turntable, and upon completion of the record performance, the electric circuit is broken to stop rotation of said turntable.

3,773,332

AUTOMATIC RECORD PLAYERS

Philip Henry Evans, Stourbridge, and Norman Lane, Halesowen, both of England, assignors to BSR Limited, Worley, Worcester, England

Filed Apr. 21, 1971, Ser. No. 136,157
Int. Cl. G11b *17/16*
U.S. Cl. 274—10 R **1 Claim**



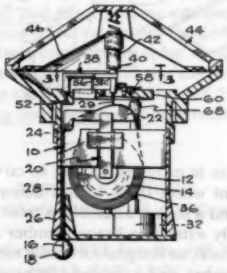
In an automatic record player of the type wherein a cam shaft is driven by worm and wheel gearing from the turntable, an umbrella centre spindle is operated by a slide mounted below the record player deck plate for locking movement and reciprocating movement produced by separate cams on the cam shaft. A gear wheel on the cam shaft is in mesh with a worm rotatably mounted about a central depending boss on the turntable, which boss has a projecting dog which engages a pivoted driving pawl on the worm when this pawl is swung into the path of movement of the dog thus causing the turntable to drive the worm and rotate the cam shaft.

3,773,333

RANDOMIZING CAM FOR TOY PHONOGRAPH

William R. Baynes, Palos Verdes Peninsula; Robert L. Cowell, Manhattan Beach, and Herbert May, Lawndale, all of Calif.

Filed May 3, 1971, Ser. No. 139,649
Int. Cl. G11b *25/06*; A63h *3/33*
U.S. Cl. 274—11 R **5 Claims**



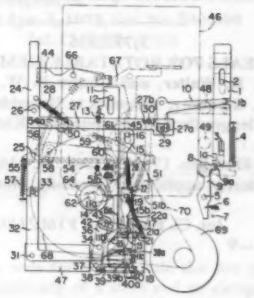
A toy phonograph of the type wherein a child pulls a knob to unwind a tape record from a take-up reel, and then releases the knob to allow a spring to rewind the tape on the reel while a needle plays a groove on the tape. A backup member is positioned at a face of the tape opposite the needle, and tension produced as a child pulls the knob moves the backup member away from the needle so that the needle does not engage a tape groove during windup. The needle is mounted on one leg of a V-shaped tone arm, the other leg of the tone arm carrying a cam follower pin. The cam follower pin is engaged with a cam that rotates during windup, so that the needle moves back and forth across the tape only during windup and falls into a randomly selected groove on the tape when playback begins.

3,773,334

TAPE CARTRIDGE EJECTING DEVICE

Morihisa Naito, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka-fu, Japan

Filed Aug. 12, 1971, Ser. No. 171,069
Claims priority, application Japan, Aug. 21, 1970, 45/73567; Aug. 21, 1970, 45/73568; Aug. 21, 1970, 45/73569
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 F **13 Claims**



A cartridge ejection control arrangement for a multiple track cartridge type recording and reproducing apparatus, in which structure is provided for selectively permitting the ejection of a cartridge automatically after playing or reproducing of the last channel, ejection automatically of the cartridge after the recording or reproduction of each channel, and for permitting continuous operation without ejection. The structure includes a first lever system for operating an ejection mechanism in response to a track selection device, the movement of the first lever system being effected by a cam on the apparatus drive means. The first lever system is operative on the last channel. A second lever system coupled to the first lever system effects the control of the first lever system for ejection of a cratridge after the reproducing or recording of each track. A third lever system is provided to control the operative positions of the first and second lever systems, and to inhibit operation of the ejection mechanism. A fourth lever system responsive to recording in the apparatus automatically controls the third lever system to effect the ejection of a cartridge after the last track has been recorded.

3,773,335

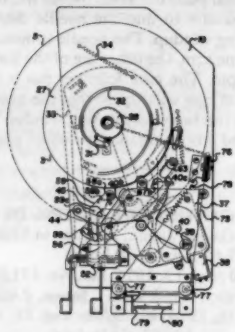
SPIRAL TRACK TYPE MAGNETIC RECORDING AND REPRODUCING DEVICE

Saburo Kato, Kawasaki, Japan, assignor to Kabushiki Kaisha Ricoh

Continuation-in-part of Ser. No. 818,255, April 22, 1969, Pat. No. 3,638,954. This application Sept. 28, 1971, Ser. No. 184,512
Int. Cl. G11b *5/00*
U.S. Cl. 274—4 J **10 Claims**

A spiral track magnetic recording and reproducing device wherein the head is mounted on a rack for radial movement.

An indicating device is mounted over a rotatable segment and operated by an inclined cam lever that moves a shaft vertially

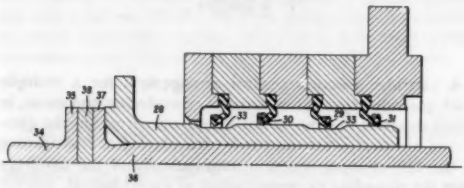


as the head moves radially. A connected pivoting lever then moves a string connected to the indicating device which thereby registers the recording time on a marked scale.

3,773,336
SEALS FOR ROTATABLE MEMBERS

Gerhard W. H. Walter, and Gunter E. W. Pietsch, both of Hamburg, Germany, assignors to Howaldtswerke-Deutsche Werft Aktiengesellschaft Hamburg und Kiel, Hamburg, Germany

Filed Feb. 17, 1971, Ser. No. 116,093
Claims priority, application Germany, June 10, 1970, P 20 28 427.9
Int. Cl. F16j *9/00*; F16l *21/02*
U.S. Cl. 277—9 **8 Claims**

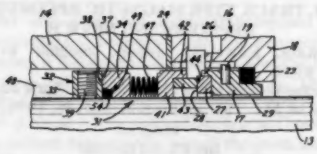


A seal for the shaft of a ship comprises a holder for two axially spaced sealing rings one of which first engages the rotatable part and the other is a spare ring which if the ring first engaging the rotatable part becomes defective can, by relative axial movement between the holder and the rotatable part, be moved into sealing relation with the rotatable member.

3,773,337
BELLOWS SEAL

William V. Adams, Kalamazoo, Mich., assignor to Duralmetallic Corporation, Kalamazoo, Mich.

Filed Jan. 17, 1972, Ser. No. 218,392
Int. Cl. F16j *15/34*
U.S. Cl. 277—89 **8 Claims**

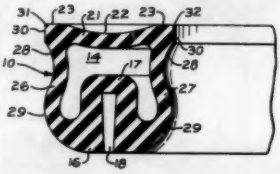


A mechanical seal construction comprising a pair of seal elements having mutually contacting sealing faces, one seal element being fixed with respect to a wall and the other seal element being capable of rotation in response to rotation of a shaft. A further element is nonrotatably connected to the shaft and is sealingly interconnected to said other seal element by a flexible bellows-type seal. Said further element comprises an axially split two-part collar surrounding and fixedly connected to the shaft and having a suitable packing associated therewith for sealingly engaging the shaft. The packing, in a preferred embodiment, comprises an annular ringlike sealing member constructed of multilayer graphite material compressed axially between the two-part collar. The collar has wedge means thereon for causing the sealing member to be radially compressed against the shaft to sealingly engage same.

3,773,338
FLEXIBLE SEAL

Carl E. Fidler, Chillicothe, and John W. Yancey, Aurora, both of Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 23, 1972, Ser. No. 237,352
Int. Cl. F16j *15/34*
U.S. Cl. 277—95 **10 Claims**

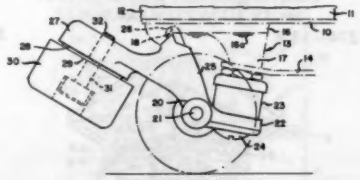


A flexible seal for sealing between two members including a hollow body of resilient material which has a mounting wall portion formed therein which portion is securable to one of the members. A sealing wall portion is formed in the body which is disposed oppositely to the mounting wall portion and sealably engageable with the other member. A pair of spaced sidewalls are formed in the body which are readily deformable to permit installation of the seal with the sidewalls in a predetermined, deformed position so as to maintain biased sealing engagement during relative movement between the members.

3,773,339
ROLLER SKATE TOE STOPS

Joel C. Aranson, Pittsburgh, Pa., assignor to Joel C. Aranson, Milton H. Aranson and Ira I. Hirsch

Filed Sept. 20, 1971, Ser. No. 181,707
Int. Cl. A63c *7/14*
U.S. Cl. 280—11.2 **1 Claim**



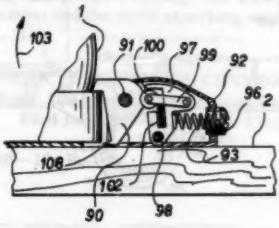
A roller skate is provided having in combination a skate frame and front wheel truck with a downwardly depending support boss and a socket assembly, a front axle housing having an upwardly extending brace member engageable in the socket of the truck, an integral forwardly extending arm carrying a stop member and a rearwardly projecting lug on the housing receiving a shock absorbing member and mounting screw whereby the housing is fixed to the depending lug of the front wheel truck.

3,773,340

SAFETY BOOT BINDING FOR SKIS

Georges P. J. Salomon, 34 de Loverchy Ave., Annecy, Hautesavoie, France

Division of Ser. No. 705,554, Feb. 14, 1968, Pat. No. 3,529,844. This application Sept. 18, 1970, Ser. No. 73,592
Claims priority, application France, Jan. 25, 1967, 6792674; Sept. 5, 1967, 67120065
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 8 Claims



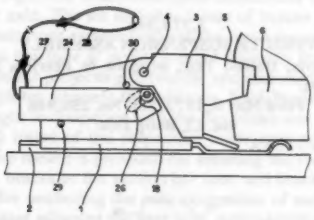
The present invention concerns a safety binding for securing a boot on a ski, in which an elastic element is made part of the kinematic transmission chain between the safety locking mechanism and the boot retaining element, whereby the latter is capable of a certain elastic play before release under the action of abnormal forces exerted by the boot on the boot retaining element.

3,773,341

SKI BINDING

Robert Mimeur, Sallanches, France, assignor to Etablissements Carpano & Pons S.A., Cluses, France

Filed Dec. 3, 1971, Ser. No. 204,433
Claims priority, application France, Dec. 7, 1970, 7043910
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 3 Claims



A safety ski binding of the type normally retaining the skier's boot on the ski and releasing the boot in case of a lifting effort exceeding a preset value, comprises a movable stirrup piece adapted to be pulled by means of a belt for voluntarily releasing the boot, said stirrup acting against a compression spring and being pivoted to the case of the device by means of a pair of lateral rivets displaceable along apertures formed in said case, the latter carrying at least one stop member engageable by said stirrup said rivets having the dual function of compressing said spring and releasing the boot retaining member.

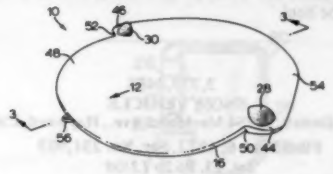
3,773,342

TOWABLE SLEIGHS

Stephen Petrik, 40 Godstone Rd., Willowdale, Ontario, Canada

Filed Oct. 14, 1971, Ser. No. 189,378
Int. Cl. B62b 13/00
U.S. Cl. 280—12 H 1 Claim

A sleigh consists of a somewhat elongated platform, the undersurface of which has three ribs disposed lengthwise; the side ribs converge rearwardly towards the middle rib which is lower than the side ribs. The undersurface curves upwards towards the edge and the upper surface has a pair of foot con-



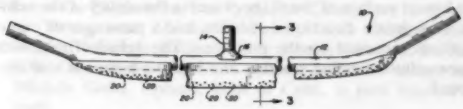
trol sockets disposed over the curved undersurface with one socket outwardly of each side rib and intermediate of its length.

3,773,343

WEAR ROD

Donald B. Ambrose, Winnetka, Ill., assignor to Martin C. Hausman, River Forest, Ill.

Filed Apr. 3, 1972, Ser. No. 240,580
Int. Cl. B62b 17/04
U.S. Cl. 280—28 7 Claims



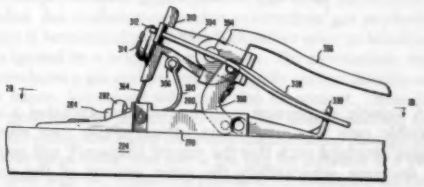
Improved wear rods for snowmobile skis are provided by bonding to the underside of a steel rod an elongated polyurethane member having alumina ceramic pellets embedded therein.

3,773,344

SKI BINDINGS

Donald F. Wilkes, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

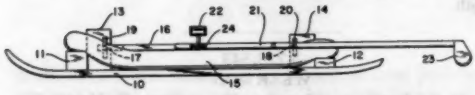
Continuation-in-part of Ser. No. 20,646, March 18, 1970, Pat. No. 3,687,470, and a continuation-in-part of Ser. No. 3,463, June 16, 1970, Pat. No. 3,671,052. This application Oct. 21, 1971, Ser. No. 191,454
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 15 Claims



Ski binding units for fastening a ski boot at the toe and heel of the boot. The toe binding unit applies cantilever loading to the toe of the boot through an abutment which overlaps the toe of the boot. The heel binding unit supports the heel on roller bearings and yieldably clamps the heel against the bearings by means of a snap action spring blade. The heel unit releases the heel of the boot laterally while the toe pivots about the toe unit, when a predetermined lateral force is ap-

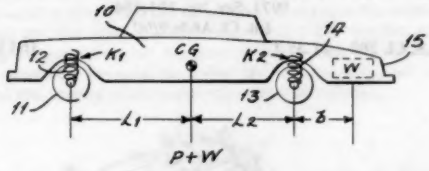
plied. The heel unit is capable of releasing the boot vertically when predetermined forces are applied to the respective units. The heel binding includes a clamping roller that engages a cam surface on the heel of the boot. Lateral displacement of the heel stresses the blade progressively until it snaps over to release the heel.

3,773,345
SNOW VEHICLE
Byron V. Mitchell, 17754 Mechland Ave., Hayward, Calif.
Filed Mar. 6, 1972, Ser. No. 231,903
Int. Cl. B62b *13/08*
U.S. Cl. 280—21 R 5 Claims



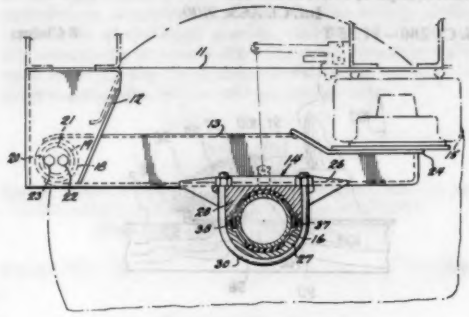
A snow vehicle is disclosed including a single ski on which is mounted stabilizing symmetrical pontoons which are positioned, in use, to extend downward to a higher elevation than the lowest surface of the ski to preserve the ability of the vehicle to maintain directional stability, and a passenger or cargo platform mounted on the pontoons. The vehicle fitted with rearwardly extending steering and braking means is also disclosed.

3,773,346
VEHICLE SUSPENSION SYSTEM
James K. Scheublein, and Gary D. Swinney, both of St. Louis, Mo., assignors to Moog Industries, Inc., St. Louis, Mo.
Filed Jan. 3, 1972, Ser. No. 215,037
Int. Cl. B60g *11/16*
U.S. Cl. 280—124 R 6 Claims



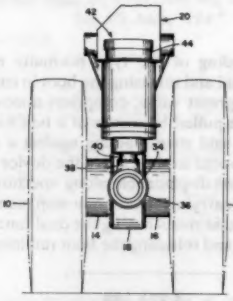
A vehicle suspension system which incorporates a novel variable rate rear suspension spring having two effective stages arranged such that the natural frequency will increase or decrease substantially the same amount as the natural frequency of the front suspension system will increase or decrease when load is added or removed. The rear suspension spring includes a first stage which combines both a constant pitch section and an increasing pitch section, and a second stage which comprises only the constant pitch section. The suspension system embodying the rear suspension springs of the foregoing character operates to maintain the front suspension natural frequency substantially equal to the rear suspension natural frequency under all loading conditions.

3,773,347
AXLE ATTACHMENT FITTING
Charles O. Traylor, Springfield, Mo., assignor to Hutchens Industries, Springfield, Mo.
Filed Apr. 12, 1972, Ser. No. 243,221
Int. Cl. B60g *11/62*
U.S. Cl. 280—124 R 9 Claims



An assembly for suspending a vehicle utilizing rigid arms pivotally attached at one end to each side of the vehicle with the other end mating with columnar springs. The axle is held in mounting brackets fixed to the rigid members and is allowed limited resilient freedom of movement in any direction. Rigid bars are attached to the front and rear of the axle within each mounting bracket and are in concentric relation to the axle. A clearance is provided between the bars and the mounting brackets to allow limited movement of the axle before the bars come in contact with the mounting brackets due to forces caused by road irregularities or rapid deceleration of the vehicle. The rigid bars provide a large contact area with resultant low stresses and are positioned so that the load path is concentric with the axle, thus, the roll moment induced in the axle is adequately reacted.

3,773,348
VEHICLE SUSPENSION ASSEMBLY
Leo W. Davis, Dallas, Tex., assignor to Peerless Mfg. Co., Dallas, Tex.
Filed May 8, 1972, Ser. No. 250,946
Int. Cl. B60p *3/00*
U.S. Cl. 280—124 A 16 Claims



Large vehicles such as off-highway dump trucks provide extraordinary suspension problems due to the immense weight of the vehicles. A suspension assembly particularly useful for such vehicles includes a dual wheel set supported by an axle housing therebetween. Trunnions extend forwardly and rearwardly from the ends of the housing. The forwardly extending trunnion is received within a spherical, laminated, elastomer-

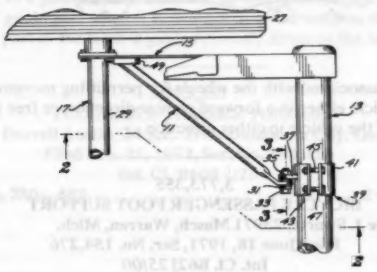
ic, bearing element which is affixed to the vehicle frame. The rearwardly extending trunnion is similarly received within a spherical, laminated, elastomeric bearing element which is affixed to the piston member of a rigidly mounted, shock absorbing suspension strut. The bearing members permit axial, radial and vertical movement of the trunnions relative to the frame of the vehicle. An arm extends vertically from the housing and is received within a recess in the frame to restrict radial movement of the suspension assembly beyond desired limits by engagement of the arm against spaced, parallel walls which partially define the recess. Axial, lateral and vertical forces are transmitted to the frame through the forwardly positioned bearing member and the shock absorbing suspension strut.

3,773,349

VEHICLE SUSPENSION CONTROL KIT

Dewey D. Boyd, 200 Montrose Dr., Folsom, Calif.

Filed July 28, 1972, Ser. No. 276,075
Int. Cl. B60g *7/00*
U.S. Cl. 280—124 B **6 Claims**



A vehicle suspension control kit for installation on a vehicle of the type including a transversely extending rear torsion bar tube having flex plates extending rearwardly from the opposite ends thereof to connect on their respective rear extremities with the respective transverse outer extremities of an articulated rear axle. The kit includes a pair of braces for connection on their front extremities with the opposite extremities of the torsion bar tube at points located inwardly from the ends thereof and for projecting outwardly and rearwardly to engage such flex plates adjacent the rear axle. Such braces are of sufficient length to cooperate with the flex plates and axle to limit downward travel of the respective outer extremities of said axle. Clamp means is provided for securing the front extremities of the braces to the torsion bar tube and bracket means is provided for anchoring the rear extremities of such braces to the flex plates adjacent the rear axle. Articulation means is interposed between the clamp means and braces to accommodate articulation of such braces relative to the torsion bar tube. Thus, the kit may be installed on such vehicle by clamping the front extremities of the braces to the torsion bar and anchoring the rear extremities thereof to the rear extremities of the flex plates and when the vehicle negotiates a corner, the brace on the outside relative to such corner will cooperate with the rear axle to limit the tendency of the outside rear wheel to tuck under such vehicle.

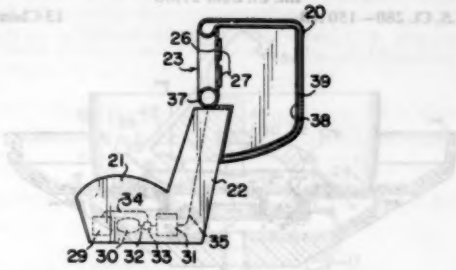
3,773,350

SAFETY DEVICE

Iwao Shibamoto, No. 31-7, 2-chome, Nishi Sugamo, Toshima-ku, Tokyo, Japan

Filed May 25, 1971, Ser. No. 146,644
Claims priority, application Japan, May 26, 1970, 45/44707; June 10, 1970, 45/49527
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **8 Claims**

A safety device comprises a bag made of an air-impervious flexible material, means for abruptly expanding said bag from the foled state to its original shape, air passage openings for sucking the ambient air into said bag therethrough under the



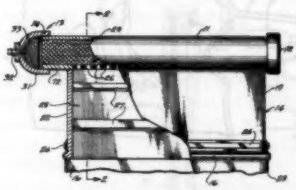
pressure differential between inside and outside of the bag in the bag expanding process and means for closing said air passage openings for sealably trapping the air in said bag.

3,773,351

GAS GENERATOR

Vincent O. Catanzarite, Las Vegas, Nev., assignors to Hubert G. Timmerman, Manhattan Beach; Louis Giattino, Palos Verdes Peninsula, both of Calif.; Joseph Calabria, Brecksville, Ohio; Robert Lynch, Greenleaf Fountain Valley, and Michele Gallo, Upland, both of Calif., a part interest to each

Filed Aug. 2, 1971, Ser. No. 167,944
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **11 Claims**



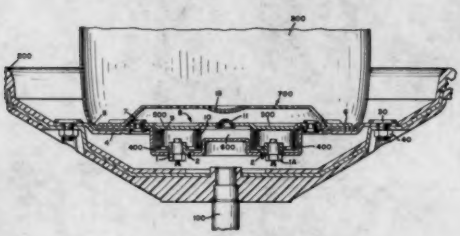
A low temperature gas generator for inflation of gas bags, particularly useful for passenger restraint in an automobile is provided. An oxidation-reduction pyrotechnic gas producing mixture is hermetically sealed in a chamber prior to initiation, and is ignited by a bridge wire initiator. The pyrotechnic mixture produces a gas comprising principally carbon dioxide and water vapor. Vaporized salts may also be present. These hot gases flow through an array of wires for sound muffling and flame arresting, through a relatively unobstructed passage to a relatively large outlet and into a gas bag for inflation in a very short time interval. Means are provided for inhibiting gas flow rates to less than sonic velocity. Subsequent deflation of the bag occurs upon condensation of water vapor and contraction of carbon dioxide.

If desired an aspirator may draw ambient air into the bag with the combustion gases, and when used the aspirator permits reverse flow, giving additional means for deflating the bag. Means are provided for controlling the rate of gas generation and gas temperature for controlled bag deployment and pressurization. A piezoelectric device is provided for firing the bridge wire initiator.

3,773,352
MULTIPLE IGNITION SYSTEM FOR AIR CUSHION GAS SUPPLY

Donald G. Radke, 307 Birch Hill Drive, Mich.

Filed Mar. 30, 1972, Ser. No. 239,547
Int. Cl. B60r *21/08*
U.S. Cl. 280—150 AB **13 Claims**

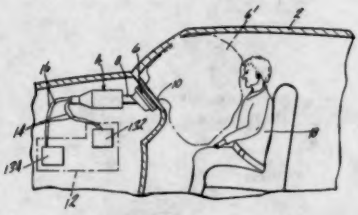


A multiple ignition system for air cushion gas supply of generated gas from pyrotechnic source to compensate for ambient temperature changes.

3,773,353
INFLATING DEVICE FOR USE WITH VEHICLE SAFETY SYSTEMS

Donald R. Trowbridge, Carbondale, and Kenneth R. Jenkins, Anna, both of Ill., assignors to Olin Corporation, New Haven, Conn.

Filed Sept. 5, 1972, Ser. No. 286,480
Int. Cl. B06r *21/08*
U.S. Cl. 280—150 AB **8 Claims**



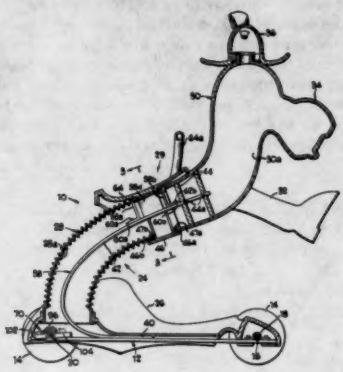
An apparatus is provided for use in safety systems utilizing a propellant charge and an inflatable member such as a safety bag for a vehicle. A propellant storage housing is provided in which two separate propellant charges are provided in axial alignment with one propellant charge adapted to be ignited during slow deployment of the system and both charges adapted to be ignited during fast deployment of the system. Two separate ignitors at the same end of the propellant housing, each of which is associated with a different propellant charge. Means are provided to provide a path through the first propellant charge to permit the ingitor to ignite the second propellant charge without igniting the first charge.

3,773,354
OPERATOR PROPELLED TOY VEHICLE

Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, both of Ill., assignors to Marvin Glass & Associated, Chicago, Ill.

Filed Feb. 22, 1972, Ser. No. 227,775
Int. Cl. A63g *19/00*
U.S. Cl. 280—218 **4 Claims**

An operator-propelled toy vehicle of the type having a body supported on rotatable wheels and including a deformable spring carried by the body with the vehicle intended to be propelled responsive to reaction forces resultant from deflection of the spring, characterized by a motion transmitting

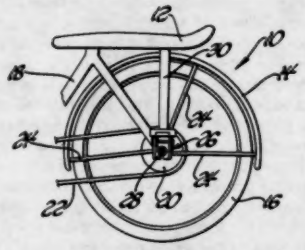


means associated with the wheels for permitting movement of the vehicle either in a forward or rear direction or free movement of the vehicle in either direction.

3,773,355
BICYCLE PASSENGER FOOT SUPPORT

Clarence J. Swartz, 23971 Masch, Warren, Mich.

Filed June 18, 1971, Ser. No. 154,276
Int. Cl. B62j *25/00*
U.S. Cl. 280—291 **4 Claims**



A foot support for bicycle passengers which includes a bracket fastened to a bicycle fork, fender support, or the like, rests on the wheel axle, and which has a foot rest member that is pivotal thereon so that it can be fixed in a weight supporting outwardly disposed position or a folded in and out of the way position.

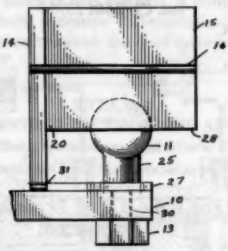
3,773,356
TRAILER HITCH GUIDE

Harry A. Eichels, 112 Grace Dr., and Emil A. Grandbouche, 1918 Dewey Rd., both of Ashtabula, Ohio

Filed Feb. 22, 1972, Ser. No. 228,063
Int. Cl. B60d *1/06*
U.S. Cl. 280—477 **8 Claims**

A guide for a trailer hitch to guide the female part of the hitch to position over the male ball so that the female part of the hitch will fall into place on the ball. The guide is made up

of a base plate suitable to rest on the standard hitch ball. The base plate has a vertical stand welded to it and A U-shaped guide member fixed to the stand at a level near the top of the



hitch ball. The base is adjustable, forwardly and rearwardly, to bring it to a position where the female hitch will engage the U-shaped guide part when it is directly over the hitch so that the female part of the hitch is guided directly down on the ball.

3,773,357

TELESCOPE TRAILER TONGUE

Harvie Darrell Austin, 24 S.E. 39th, Oklahoma City, Okla.

Filed Feb. 25, 1972, Ser. No. 180,411

Int. Cl. B60d *1/16*

U.S. Cl. 280—482 **2 Claims**

A tongue for use on various types of trailers, the tongue being of telescopic type so that it can be selectively extended or retracted for particular uses, the tongue accordingly being comprised of an inner sleeve or tongue that is slideable within an outer sleeve or tongue so that the towing vehicle can be controlled in distance from the towed vehicle.

3,773,358

TRAILER COUPLING DEVICE

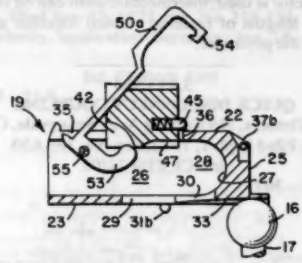
Neal L. Butler, and Anna S. Butler, both of 4809 Wenton Way, San Jose, Calif.

Filed Oct. 25, 1972, Ser. No. 300,473

Int. Cl. B60d *1/06*

U.S. Cl. 280—513 **8 Claims**

The trailer coupling device includes a housing, a block member, and a block moving member. The housing forms an elongated chamber with a semispherical pocket towards the front end of the housing. The lower portion of the housing has a ball opening to receive a ball member, and has a slot extending towards the front end of the housing to enable the ball member to move into the semispherical pocket. The block member is movable up and down in the chamber through a block opening in the upper portion of the housing over the ball opening. The block moving member has an elongated bar



pivotally connected to the housing to hold the block member inside the chamber to force the ball member into the semispherical pocket, and has a lifting arm to raise the block member through the block opening to allow the ball member to be removed from the housing through the ball opening.

3,773,359

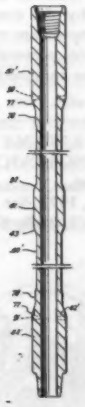
INTERMEDIATE DRILL STEM

Glenn G. Chance, Houston; Sam T. Crews, and Clenis E. Wilson, both of Midland, all of Tex., assignors to Smith International Inc., Whittier, Calif.

Continuation of Ser. No. 825,109, May 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 669,138, Sept. 20, 1967, abandoned. This application June 24, 1971, Ser. No. 165,810

Int. Cl. F16l *13/02*

U.S. Cl. 285—286 **9 Claims**



Intermediate drill stem includes an alloy steel body of smaller inner diameter than usual for drill pipe and machined to drill pipe outer diameter except having one or more integral protectors of larger outer diameter at intervals along its length and except further having integral transition portions of somewhat larger than drill pipe outer diameter near its ends and portions of elevator shoulders at the ends, the ends also being built up externally and internally with weld metal to match the wall thickness of extra long alloy steel connector members rod welded to the ends of the body. Typically the body of the intermediate drill stem is made from a worn out

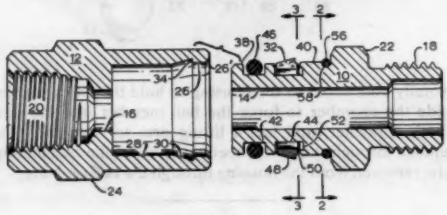
drill collar. If the ends of the old collar are not too far gone the original integral drill collar connectors can be used instead of welding on connector members. New material may be used for the body and if anticipated loading is not too great carbon steel could be used instead of alloy steel. In any case, the integral protectors could be omitted. However, if a radially integral protector is used, intermediate stem can be made from a plurality of lengths of material welded together at the thick wall area of the protector.

3,773,360

QUICK DISCONNECT COUPLING

William R. Timbers, 715 Nutmeg Ave., Sunnyvale, Calif.

Filed Sept. 1, 1972, Ser. No. 285,630
Int. Cl. F16l *21/08*
U.S. Cl. 285—307 13 Claims



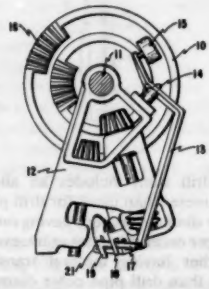
A quick connect and disconnect coupling for a pair of interfitting male and female coupling members which includes a resilient locking member carried by the male coupling member and snap locking with the female coupling member upon axial engagement of the coupling members into locked condition. Camming means on the female coupling member are engageable with the locking member when the coupling members are further axially engaged beyond the locked condition to contract the locking member into unlocked condition. Upon still further axial engagement of the coupling members, locking member capture means on the male coupling member engage with the locking member to hold the same in contracted condition whereby the coupling members may be separated. Removable stop means may be included between the coupling members to prevent inadvertent unlocking, which stop means must be removed before disconnection of the coupling is possible.

3,773,361

TWINE CUTTING DEVICE FOR BALER

Dan Dykstra, Trosky, Minn.

Filed May 10, 1972, Ser. No. 252,019
Int. Cl. B65h *69/04*
U.S. Cl. 289—14 4 Claims



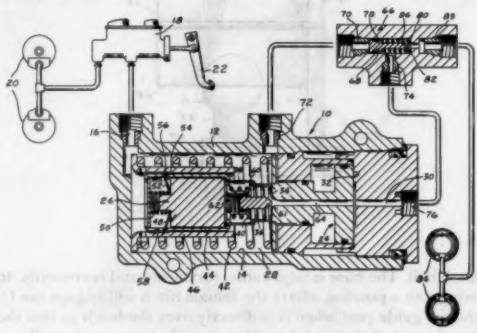
A twine cutting device for a baling machine including specifically a moving anvil pressed against the twine cutting knife by a cam operated lever operated from the twine tying mechanism.

3,773,362

PROPORTIONING VALVE WITH PRESSURE LIMITING

Richard L. Lewis, South Bend, Ind., assignor to The Bendix Corporation, South Bend, Ind.

Filed Dec. 1, 1971, Ser. No. 203,712
Int. Cl. B60t *13/00*
U.S. Cl. 303—6 C 8 Claims



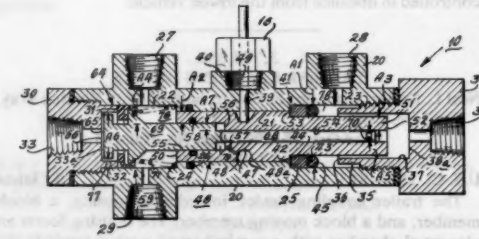
A proportioning valve is installed in the rear brake line of the vehicle equipped with separate brake hydraulic systems for the front and rear brakes. The proportioning valve permits uninhibited fluid communication to the rear wheel brakes until a first pressure level is attained whereupon the valve restricts flow of fluid to the rear wheel brakes to establish a lower fluid pressure level in the latter than the fluid pressure level communicated to the front wheel brakes. An additional valve in the rear brake line is responsive to the pressure differential across the proportioning valve to terminate fluid communication to the rear wheel brakes when the pressure differential across the proportioning valve attains a predetermined amount. This feature enables the relationship between the braking pressure delivered to the rear wheel brakes and the braking pressure delivered to the front wheel brakes to approximate closely the ideal pressure relationship. In one embodiment of the invention, the point at which fluid communication to the rear wheel brakes is initially restricted by the proportioning valve varies as the rate of deceleration of the vehicle varies. In a second embodiment of the invention, the pressure level at which the proportioning valve initially restricts fluid pressure communication to the rear wheel brakes varies as the load carried by the rear axle of the vehicle varies.

3,773,363

CONTROL VALVE AND SYSTEM

Joseph E. Papin, Florissant, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Mar. 10, 1972, Ser. No. 233,665
Int. Cl. B60t *13/10*
U.S. Cl. 303—6 C 38 Claims



A dual fluid pressure brake system is provided with a proportioning valve responsive to the separate fluid pressures of

both said systems for performing a proportioning operation on the fluid pressure in one of said systems, and said proportioning valve is also responsive to the fluid pressure in said one system of a lesser predetermined value to perform its proportioning operation thereon at a lesser proportioning ratio upon the failure of the other of said systems. A comparator piston is responsive to fluid pressure differentials in excess of a predetermined value between the dual systems for actuating a warning signal.

3,773,364

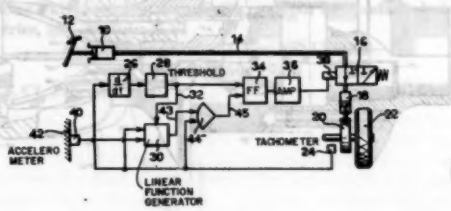
BRAKE CONTROL METHOD AND APPARATUS

Giancarlo Michellone, Cambiano, and Mario Palazzetti, Turin, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 31, 1970, Ser. No. 103,092

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 P **2 Claims**



The anti-skid braking system utilizes a speed detector to provide a first signal corresponding to the angular speed of the wheel. This signal is differentiated and then applied to a threshold circuit to obtain a pulse for controlling a valve to govern the release of the hydraulic brake. The output pulse from the threshold circuit is also applied to a control circuit which receives as input, a signal corresponding to the vehicle decelleration and the wheel feed signal. The output of the control circuit is compared with the wheel speed signal in a comparing circuit, the output of which is applied to a flip-flop circuit to reset the flip-flop circuit and allow the control valve to reapply the brakes.

3,773,365

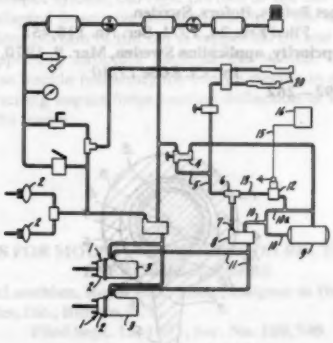
ANTI-LOCK BRAKE SYSTEM

Charles Horowitz, Niles, and Sergio Campanini, Lincolnwood, both of Ill., assignors to The Berg Manufacturing Company, Des Plaines, Ill.

Filed May 8, 1972, Ser. No. 251,320

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 CH **1 Claim**



A brake system in which a valve is responsive to excess torque sensed in an anti-lock device to deliver fluid pressure to the emergency brake actuators to reduce the braking pressure thereof and thus to prevent wheel lock-up.

3,773,366

ANTISKID DEVICE FOR CAR WHEELS ESPECIALLY FOR ROAD VEHICLES

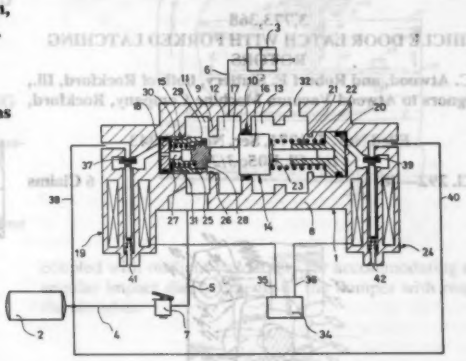
Erich Reinecke, Beinhorn; Fritz Isernhagen, Letter; Alfred Klatt, Wettbergen, and Erwin Holthusen, Itzehoe, all of Germany, assignors to Westinghouse Bremsen-Und Apparatebau GmbH, Hannover, Germany

Filed Jan. 17, 1972, Ser. No. 218,134

Claims priority, application Germany, Jan. 18, 1971, P 21 02 142.1

Int. Cl. B60t *8/08*

U.S. Cl. 303—21 F **11 Claims**



Anti-skid apparatus for vehicle wheels, particularly street vehicles, including a braking pressure control valve device which modulates the braking pressure as a function of specified values of a magnitude indicating the skid threshold of the wheels in response first, to release of braking pressure and subsequently to restoration of braking pressure, and throttle means with a movable throttle member for delaying the rate of build-up of braking pressure during the restoration phase.

3,773,367

FLUID PRESSURE BRAKING SYSTEMS FOR VEHICLES

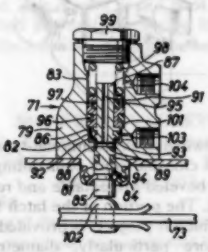
Duncan William Osborne, and Leslie Cyril Chouings, both of Leamington Spa, England, assignors to Automotive Products Company Limited, Leamington Spa, England

Filed July 20, 1971, Ser. No. 164,299

Claims priority, application Great Britain, Feb. 24, 1971, 5,358/71

Int. Cl. B60t *8/26*

U.S. Cl. 303—22 R **4 Claims**



A liquid pressure reducing valve for use in a liquid pressure vehicle braking system to reduce the pressure acting to apply the rear wheel brakes in relation to the pressure available at

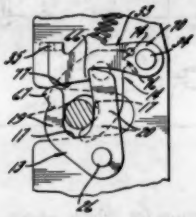
the pressure source of the braking system under heavy braking comprises a valve closed when a predetermined pressure is built up in the braking system and including a plunger through which pressure is transmitted to rear wheel brake operating motor cylinders when the valve is closed, a spring being provided which opposes the source pressure acting on the plunger and so reduces the pressure exerted by the plunger on liquid in the motor cylinders. The liquid pressure acting to close the valve is opposed by resilient means the load of which is varied in accordance with the load supported by the rear wheels of the vehicle.

3,773,368

VEHICLE DOOR LATCH WITH FORKED LATCHING ROTORS

Lyle C. Atwood, and Robert E. Slattery, both of Rockford, Ill., assignors to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Nov. 5, 1971, Ser. No. 195,943
Int. Cl. E05c *3/26*
U.S. Cl. 292—48 **6 Claims**



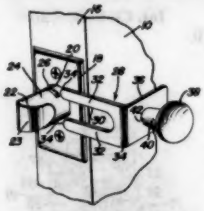
A pawl includes a detent which hooks against one leg of a lower forked latching rotor to hold the rotor in a secondary latched position and hooks against the other leg of the rotor to hold the rotor in a fully latched position. A second detent on the pawl blocks against an upper latching rotor to hold the latter in its fully and secondary latched positions.

3,773,369

LATCH BOLT GUARD

Walter A. Wersonick, 2933 San Mateo, N.E. Albuquerque, N. Mex.

Filed July 18, 1972, Ser. No. 272,889
Int. Cl. E05c *19/18*
U.S. Cl. 292—150 **8 Claims**



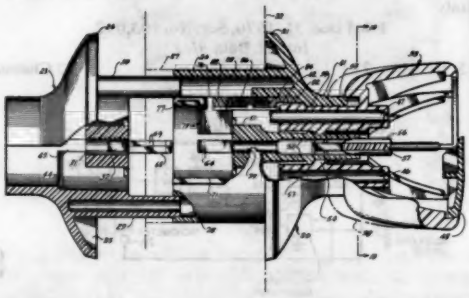
A horizontally swinging conventional-type door has the usual openable and closable jamb confronting edge provided with a customarily beveled projectable and retractable knob-operated latch bolt. The portion of the latch bolt proximal to the edge beyond which it projects is provided with tamperresisting means, more particularly, diametrically opposite keeper notches. The notched portion of the latch serves to accommodate a manually applicable and removable jimmy-proofing guard which is bodily attachable and detachable and is, after the door is latched, applied from the room side. This guard has means which is releasably and retentively connectible with the keeper notches in a manner to positively secure the latch bolt in a non-retractable bolt setting and latching position. The guard has a handle which makes it readily applicable and removable.

3,773,370

PRIVACY LOCK

Torsti T. T. Jerila, Baldwin Park, Calif., assignor to Acme General Corporation, Monrovia, Calif.

Filed June 9, 1972, Ser. No. 261,515
Int. Cl. E05c *1/16*
U.S. Cl. 292—169.21 **11 Claims**



A door latch, the knobs of which may be turned either clockwise or counterclockwise for operating the latch bolt is described. One of the knobs engages the corresponding escutcheon when the knob is pushed towards the door to prevent rotation and provide a privacy lock. A pair of pins extend between the knobs and engage ramps on the inside end of latch bolt for retracting it. The latch bolt is split so that the ramp portions may collapse towards each other for insertion through a hole in the edge of the door. Interlocking support posts on the two escutcheons prevent the latch bolt from collapsing during use. A "kickoff" mechanism operated by the latch bolt prevents inadvertent locking and also provides resilient release to prevent damage in case the door is locked while the locking knob is held in. The door latch is made of injection molded plastic and the two escutcheons are held together by a single axial screw.

3,773,371

DEVICE FOR THE RECIPROCAL SECURING OF TWO ELONGATED MEMBERS TELESCOPICALLY ARRANGED IN RELATION TO EACH OTHER

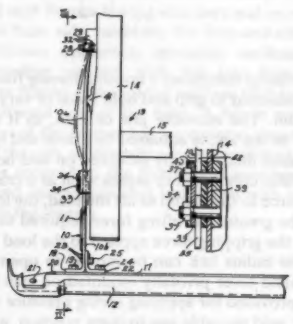
Carl Ingvar Carlsson, Tidaholm, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

Filed Feb. 24, 1971, Ser. No. 118,451
Claims priority, application Sweden, Mar. 9, 1970, 3093/70
Int. Cl. E05c *17/30*
U.S. Cl. 292—262 **4 Claims**

A device for releasably locking a rod of circular cross-section within a tube of circular cross-section comprises a locking

ring fitted with plate upon the tube. The inner wall of this ring is eccentric with respect to the center axis of the ring. The tube has in its wall a cutout into which is fitted a cylindrical locking pin, the diameter of which is such that in one angular position of the ring the pin permits the rod to occupy a position in which the pin is free to rotate about its axis while in another angular postion of the ring the pin presses the rod against the tube due to the eccentricity of the inner wall of the locking ring. As a result, the rod is locked within the tube. Release is effected by returning the locking ring into its initial angular position.

3,773,372
COMBINATION JACKING AND RESILIENT BUCKLING COLUMN BUMPER SYSTEM
Victor F. Hebert, San Jose, Calif., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Apr. 22, 1971, Ser. No. 136,374
Int. Cl. B60r *19/08*
U.S. Cl. 293—89 **10 Claims**

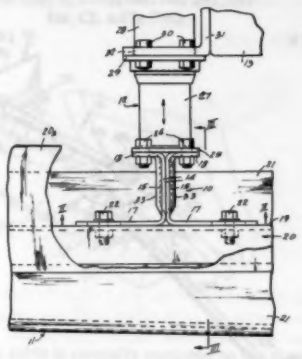


An energy storing body has a resilient portion of substantial length capable of resilient energy-storing buckling deflection responsive to force applied thereto effecting shortening of a straight line distance between opposite ends of the bar, and a second substantial length rigid portion substantially reinforced against buckling deflection and capable of transmission of the force to the resilient portion of the bar.

In a bumper system, the rigid portion of the bar is attached to and adapted to receive impact force from the bumper and the resilient portion of the bar is supported on and in relation to a supporting structure such as the vehicle frame in a manner to buckle resiliently for energy storing in response to bar-shortening impact force causing deflection of the bumper toward the frame.

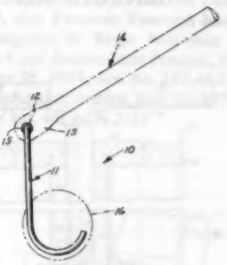
3,773,373
MEANS FOR MOUNTING BUMPERS ON RECTILINEAR ENERGY ABSORBERS
John McLauchlan, Royal Oak, Mich., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed Sept. 15, 1971, Ser. No. 180,740
Int. Cl. B60r *19/02*
U.S. Cl. 293—99 **14 Claims**

Bumper mounting brackets provide for rectilinear transmission of thrust from the bumper to a rectilinear energy absorber, and enable relative angular, rocking freedom of movement to minimize lateral or bending strains on the absorber. The brackets have rectilinear rigidity and impact resistance,



coupled with resilient yieldability for accommodating relative angular impact displacements of the bumper with respect to the absorber.

3,773,374
GOLF BALL RETRIEVING DEVICE
Emil A. D'Luhy, 363 Lockport St., Youngstown, N.Y.
Filed June 10, 1971, Ser. No. 151,686
Int. Cl. A47f *13/06*
U.S. Cl. 294—19 A **1 Claim**

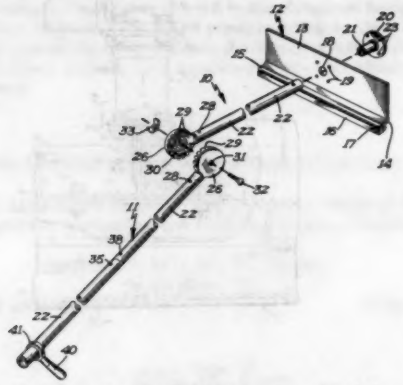


A device for retrieving golf balls from water. The device includes primarily, a double ended hook pivotably secured to a telescoping rod. The double ended hook of the device when engaging the ball enables the user to lift the ball from the water without the hook discharging the ball.

3,773,375
SNOW REMOVAL DEVICE
George R. Nehls, 3925 W. 50th St., Minneapolis, Minn.
Filed May 8, 1972, Ser. No. 251,039
Int. Cl. E01h *5/02*
U.S. Cl. 294—54 **2 Claims**

A snow removal device for removing snow from roofs comprises a blade connected to a sectional handle. A pair of the handle sections are interconnected together by coupling members which permit angular adjustment between the sections. Each coupling member is provided with a plurality of teeth which interlock with teeth on the other coupling member thereby permitting a wide range of adjustment between the

respective handle sections. By angularly adjusting the sections, the blade may be positioned in proper relation with



respect to the surface of the roof, thereby permitting the snow to be removed from the roof in a highly effective manner while the user is standing on the ground.

3,773,376

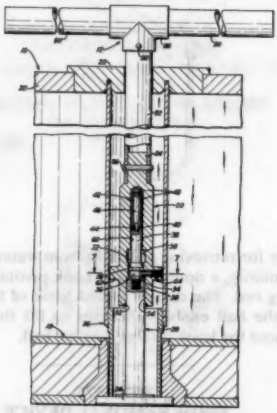
RADIOACTIVE SOURCE HANDLING APPARATUS

John M. Orange, Pittsburgh, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 3, 1971, Ser. No. 177,674

Int. Cl. G21c *19/20*

U.S. Cl. 294—86 A **14 Claims**



Apparatus for safely handling, substantially remotely, small articles which are dangerous if brought excessively close to humans, such as radioactive sources. The invention comprises a non-round, cross-sectional shape in the body of the source holder with a groove formed in that shaped portion, and a carrier member having a mating internal shape to fit over the shaped body to turn the holder and source, and provided with a spring loaded detent pin to fit into the groove in the holder to thereby lift and lower and carry the holder and source.

3,773,377

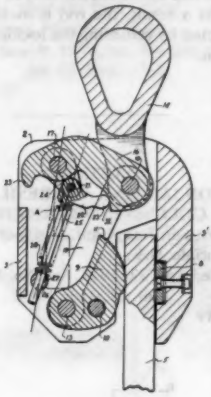
LIFTING CLAMPS

Valentine T. Kopp, Lynbrook, Long Island, N.Y., assignor to Merrill Brothers, Maspeth, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,209

Int. Cl. B66c *1/24*

U.S. Cl. 294—104 **10 Claims**



A lifting clamp comprises a housing having fixed and movable jaws positioned to grip and hold loads of varying thickness therebetween. The movable jaw or cam, as it is sometimes referred to in the art, is actuated by a link and lever connection to a radius link pivotally mounted on said housing, which said link is also connected to means such as a crane for applying lifting force to the clamp to lift the load, the leverage being such that the greater the lifting force required to lift the load, the greater the gripping force applied to the load by the movable jaw. The radius link can be moved to open or close the jaws by a hand lever pivotally mounted on said housing, and means are provided for applying spring pressure to said radius link to lock said movable jaw in open position, and in various closed positions depending on the thickness of the load.

3,773,378

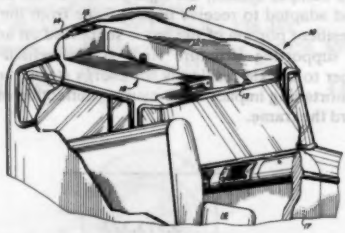
VEHICLE OVERHEAD CONSOLE

Daniel A. Lewis, 5730 N. 23rd Ave., Phoenix, Ariz.

Filed Aug. 22, 1972, Ser. No. 282,788

Int. Cl. B60r *7/04*

U.S. Cl. 296—37 R **8 Claims**



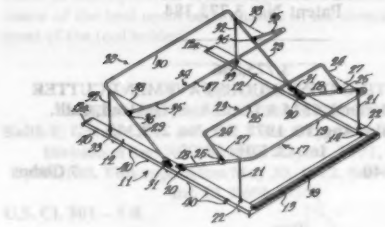
This specification discloses a console that is mounted on the underside of the roof of a vehicle cab midway the sides thereof. The console is of elongate, rectangular shape and provides two compartments, one of these is a forward compartment having an inclined bottom and a rearwardly opening access area. The rear compartment has an access opening on each side which is normally closed by a door that is hingedly mounted on its upper edge.

3,773,379

FOLDING COVER FOR PICKUP TRUCK

William C. Loiseau, Mobile Estates Lot 25, Watertown, S. Dak.

Filed Aug. 31, 1972, Ser. No. 285,512
Int. Cl. B60j 7/12
U.S. Cl. 296—107 15 Claims



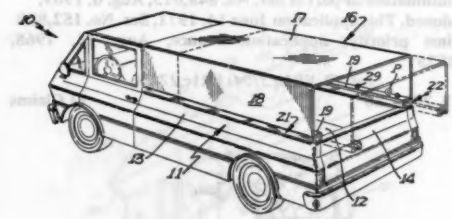
A folding cover structure for the cargo body of a pickup truck has a wooden base with side members which overlie the cargo body sidewalls and a front cross member behind the cab. Front and rear frames having side bars and cross bars are pivoted on the base side members for fore-and-aft swinging movement between oppositely upwardly inclined erected positions, a loading position with the rear frame leaning against the front frame, and a folded position with both frames lying on the forward part of the base. A fabric cover in the erected position of the frames has a top panel about coplanar with the top of the cab, a depending front panel the lower margin of which is secured to the front cross member, and depending side and rear panels that lash down with ropes. The cover folds with the frames.

3,773,380

TRACK MOUNTED COVER FOR PICKUP TYPE TRUCK

Robert G. Stockdill, 7110 Green Valley Rd., Golden Valley, Minn.

Filed July 15, 1970, Ser. No. 55,196
Int. Cl. B60j 7/02, 7/18
U.S. Cl. 296—137 B 1 Claim



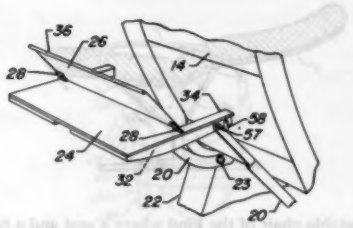
A pickup truck having an open top truck body is provided with a rigid metallic cover. A track structure slidably mounted the rigid cover on the truck body and includes a pair of inverted channel shaped upper tracks secured to the internal flanges of the side walls of the rigid cover. A pair of T-shaped lower tracks are secured to the upper flanges on the side walls of the truck body. Each upper track engages with a lower track to permit the rigid cover to slide rearwardly from a forward position and thereby permit unloading of the truck body adjacent the front end thereof.

3,773,381

COMPACT TRAY TABLE

Edward J. Brennan, Litchfield, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed May 8, 1972, Ser. No. 251,309
Int. Cl. A47c 7/62
U.S. Cl. 297—191 4 Claims



Seat back tray table is pivotally mounted to the frame of a seat, and preferably an aircraft passenger seat, so as to be stowable in a recess in the back of the seat but easily movable to a horizontal use position. The table is formed in two hinged sections including an outer thicker section which is fixed to a pair of side support frame members and an inner thinner section which can be pivoted 180° toward the seat back to be supported by the side support frame members in their horizontal use position. The compact table provides more passenger knee room than non-folding prior art tray tables and also permits the table assembly to be of less weight since the pivoted portion of the table would not be expected to receive the loading applied to the fixed table portion which is more accessible to a seat occupant.

3,773,382

SEATS, PARTICULARLY FOR MOTOR VEHICLES

Roger M. Coursault, and Francois Fourrey, both of Billancourt, France, assignors to Regie Nationale Des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed June 28, 1971, Ser. No. 157,463
Claims priority, application France, July 10, 1970, 7025840
Int. Cl. A47c 7/14
U.S. Cl. 297—284 2 Claims

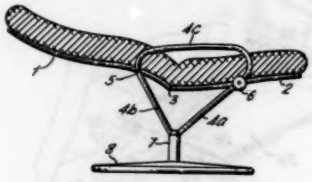
Seat comprising a seating squab and a back-rest cushion having lateral edges and parts adjustable against the force exerted by an elastic member, round axes parallel to the edges of the seating portion and of the back portion, characterized in that each controllable part of the seating portion and of the back portion is firmly fixed to a sliding framework such as 11 for the lateral edges 4 inserted between a fixed locking plate 15 and a movable locking plate 16, this latter being controlled by a control device.

3,773,383

READJUSTABLE CHAIR

Jostein Ekornes, 6222 Ikornes, Norway

Filed Oct. 28, 1971, Ser. No. 193,430
Claims priority, application Norway, Oct. 29, 1970, 4125/70
Int. Cl. A47c *1/032*
U.S. Cl. 297—320 3 Claims



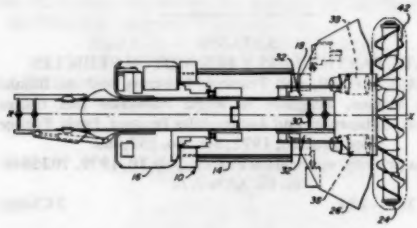
Readjustable chair of the kind where a seat and a back are hinge connected to each other, and are supported on a leg subframe work such that the mutual angular position of the seat and back may be altered. Two rigidly fixed supports are provided on each side of the chair, raising from the leg subframe work, and which can carry arm rests. The back of the chair is pivoted to the back support. The seat is fixed to the other support by a pair of slidable and fixable slide shoes.

3,773,384

MINING MACHINE

Roger C. Anderson, 304 16th St., Franklin, Pa.

Filed Apr. 16, 1971, Ser. No. 134,734
Int. Cl. E21c *27/24*
U.S. Cl. 299—76 26 Claims



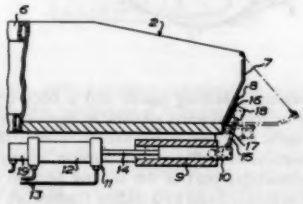
A mining machine and more particularly a mining machine having a rotary drum type cutting head which cuts clearance for the supporting structure thereof.

3,773,385

DEVICE FOR FACILITATING OF THE OPERATION OF AUTOMATICALLY OPERABLE PLATFORM WALLS OR GATES AT DUMP VEHICLES

Sven Alfred Sandberg, Stigarvagen 3 5-61100 Nykoping, Sweden

Filed July 10, 1972, Ser. No. 270,160
Int. Cl. B60p *1/26*
U.S. Cl. 298—23 MD 4 Claims



This invention relates to improvements in the device for opening of body gates of dump trucks or the like described in U.S. Pat. No. 3,173,724. By hinging a separate flap-like element at the bottom at the body platform and pivotally connecting the link of the device according to said patent to said element the gate will be indirectly biassed by the link. The disadvantages of jamming gates is thereby eliminated.

ERRATUM

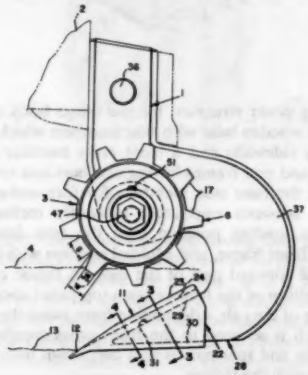
For Class 299—76 see:
Patent No. 3,773,384

3,773,386

PERFORATING CONTINUOUS PAVEMENT CUTTER

Vernon R. Soderlund, 6514 A Lucas Ave., Oakland, Calif.

Filed Aug. 10, 1972, Ser. No. 279,345
Int. Cl. E01c *23/09*
U.S. Cl. 299—40 7 Claims



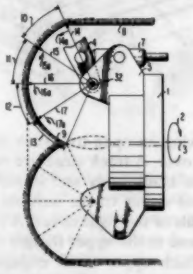
An apparatus used in conjunction with the ripper bar of a prime mover for perforating a section of overlaying asphaltic pavement along a cutting line, which consists of a ground engaging wheel formed with a toothed cutting edge, and a blade for lifting a severed portion of pavement into engagement with the cutting edge so as to be sheared along a well defined cutting line.

3,773,387

TOOL WITH SWEEPING MOVEMENT FOR A CONTINUOUS BORING OR CUTTING MACHINE

Marcel Montacie, Paris, France, assignor to Union Industrille Blanzy-Ouest, Paris, France

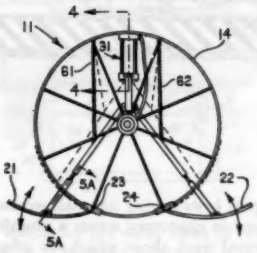
Continuation-in-part of Ser. No. 848,013, Aug. 6, 1969, abandoned. This application June 14, 1971, Ser. No. 152,839
Claims priority, application France, Aug. 13, 1968, 68162825
Int. Cl. E01q *3/04*; E21c *27/24*
U.S. Cl. 299—86 11 Claims



A plurality of individual tools mounted on a rotating head of a continuous drilling machine are each supported by a tool

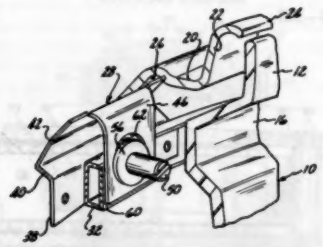
holder which is angularly oscillated at constant amplitude about an axis perpendicular in space to that of the rotating head. The oscillating axis for each tool is at the same radius with respect to the axis of the rotating head, and the oscillatory movement of each tool holder is circumferentially offset with respect to the other tool holders to insure the simultaneous sweeping of four concentric zones corresponding to the advance of conical form of the cutting front. Means are provided to exert periodic forces to produce a discontinuous advance of the tool upon each change in the direction of movement of the tool holder.

3,773,388
SELF-ALIGNING WHEEL STRUCTURE
Keith E. Gorzell, P.O. Box 502, Lake City, Calif.
Division of Ser. No. 143,884, May 17, 1971, Pat. No. 3,684,180. This application May 30, 1972, Ser. No. 258,024
Int. Cl. B60b *19/00*
U.S. Cl. 301—5 R **4 Claims**



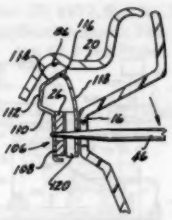
Power operated legs pivot curved feed radially outward of a wheel for fixing the rotary wheel position as upon uneven terrain or in the presence of exterior forces tending to rotate the wheel. When retracted the feet circumferentially fit the wheel for ready rolling of the wheel to another location.

3,773,389
WHEEL COVER
Edwin E. Foster, and Thomas E. Foster, both of Austin, Tex., assignors to said Edwin E. Foster, by said Thomas E. Foster
Filed Dec. 27, 1971, Ser. No. 212,094
Int. Cl. B60b *7/06*
U.S. Cl. 301—37 R **19 Claims**



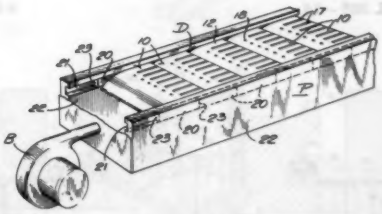
A cover for a vehicle wheel having a plurality of wheel gripping spring fingers on the inner side thereof. At least one of the spring fingers is formed with an abutment engaged by a cam rotatably supported by the cover and operable from the outer side of the cover to displace and flex the spring finger into and out of engagement with the wheel to enable removal of the cover.

3,773,390
WHEEL COVER
Edwin E. Foster, and Thomas E. Foster, both of Austin, Tex., assignors to said Edwin E. Foster, by said Thomas E. Foster
Filed Dec. 27, 1971, Ser. No. 212,095
Int. Cl. B60b *7/06*
U.S. Cl. 301—37 R **25 Claims**



A cover for a vehicle wheel having a plurality of wheel gripping spring fingers on the inner side thereof. At least one of the spring fingers is formed with an abutment engageable by a manually operable force-applying member insertable through an access opening in the cover to flex the spring finger out of engagement with the wheel to enable removal of the cover.

3,773,391
AIR CONVEYOR
Robert E. Crandall, Greendale, and Glenn J. Eggert, Cedarburg, both of Wis., assignors to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Sept. 7, 1971, Ser. No. 178,058
Int. Cl. B65g *53/04*
U.S. Cl. 302—31 **3 Claims**

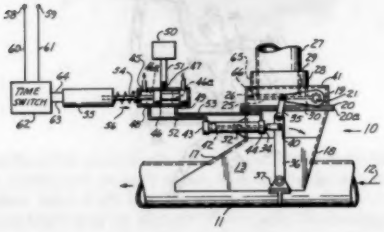


A conveyor employing a gaseous conveying medium has a modular conveyor deck that provides wide adaptability to materials which may be conveyed, regulation of material flow, and the shape and extent of the conveyor deck. Each conveyor deck module has a combination of orifices to provide the precise gas flow characteristics desired at any point along the deck. The modules may be adjusted, altered, or replaced to modify the conveyor for changes in material being conveyed or the flow pattern thereof.

3,773,392
CHARGING VALVE FOR PNEUMATIC TRANSPORT SYSTEM

Peter H. Luiten, Monrovia, and John U. Regus, West Covina, all of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed Apr. 14, 1972, Ser. No. 244,197
Int. Cl. B65g *53/40*
U.S. Cl. 302—52 **11 Claims**



There is disclosed a drop gate valve on which material to be transported through a transport pipe is deposited so that when the gate is opened the material drops down through a valve housing built in-line with the transport pipe so that it drops into the transport pipe where it is carried through the pipe by air suction. A mechanically operated linkage mechanism is arranged to open the gate periodically and also to hold the gate in its closed position against the valve seat between the intermittent openings of the gate. A retaining ring is also provided in relation to the gate to control or retain the drain off of liquids which it is desired shall not freely drain off the valve body. This also provides a peripheral opening for the admission of air into the valve body each time the gate is opened.

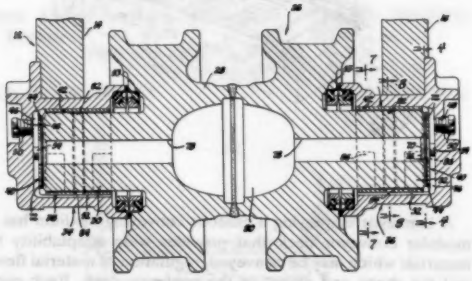
ERRATA

For Classes 303—6 C thru 303—22 R see:
Patents Nos. 3,773,362 thru 3,773,367

3,773,393
TRACK ROLLER ASSEMBLY

Thomas A. Story, Aurora, and Peter B. Cadou, Shaker Heights, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1972, Ser. No. 290,462
Int. Cl. B62d *55/14*
U.S. Cl. 305—14 **4 Claims**

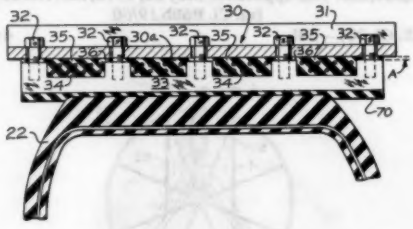


A track roller assembly including a track roller having axially aligned axle shafts rotatably mounted within end caps which are securable to the track frame of a crawler tractor. Each end cap is provided with a bearing assembly which includes a sleeve-type bushing and a disc-type washer which respectively serve to absorb radial and thrust loads. The inner circumferential bearing surface of the bushing is partially relieved at points adjacent the opposite edges of the bushing so as to prevent binding of the axle shafts due to misalignment between the axle shafts and the end caps.

3,773,394
FLEXIBLE TRACK BELTS

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 27, 1970, Ser. No. 93,033
Int. Cl. B62d *55/24, 55/28*
U.S. Cl. 305—38 **14 Claims**

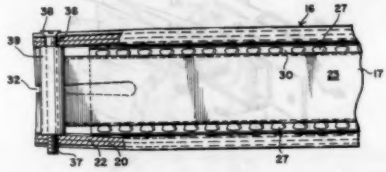


Circular support belts having internal, wound inextensible filaments encased in elastomer retain a plurality of circumferentially disposed track shoes which are attached to these support belts through an elastomeric couple in which shaped keepers are employed to compressively load the elastomer at the couple to secure the track shoes to the internal inextensible filaments of the support belts. A dense elastomer insulated joint is formed wherein direct physical contact by the track shoes and/or the keepers with these filaments is avoided and a resulting couple is obtained which prevents slipping movement between the track shoes and the filaments. The resulting track belt system can be employed about the periphery of pneumatic tire carcasses to increase traction, protect the carcass, etc.

3,773,395
SLIDING SUPPORT WITH ADJUSTABLE SHOCK BLOCK

Jack A. Antonaccio, New City, N.Y., assignor to Buildex Incorporated, Jericho, N.Y.

Filed Jan. 13, 1972, Ser. No. 217,529
Int. Cl. F16c *21/00*
U.S. Cl. 308—3.8 **8 Claims**



A slide mechanism includes at least two telescoping channel shaped slide members or supports having confronting race defining grooves formed in their side legs, ball bearings being retained between the races. The outer channel has a longitudinal slot at the rear end of its cross web and a screw extends between the outer channel side legs to contract these legs on

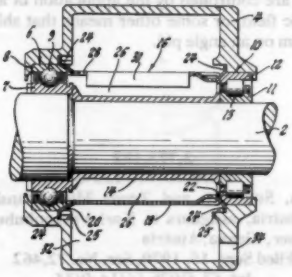
opposite sides of the slot with the tightening of the screw, so that with the telescoping closing of the slide members,some of the ball bearings are tightly embraced by the correspondingly contracted races to lock the slide member against shock and vibration. A rubber sleeve on the screw extends between the side legs and functions as a bumper.

3,773,396

SHAFT SUPPORTING ASSEMBLY INCLUDING A FLUID DEFLECTING BEARING SPACER

Sydney E. Easley, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 30, 1972, Ser. No. 302,095
Int. Cl. F16c *33/66*
U.S. Cl. 308—187 2 Claims



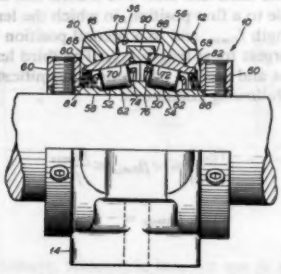
An annular spacer for the outer races of two bearings supporting a shaft in a housing is coaxial with the shaft. The spacer has projecting ears at each axial end engaging slots in the outer race and housing to prevent rotation of the spacer or outer race with respect to the housing. The spacer has one or more axially extending holes for the escape of fluid lubricant and an inwardly projecting fin on the far side, in the direction of shaft rotation, of each hole to direct lubricant out through the hole into a collection chamber in the housing.

3,773,397

SELF-ALIGNING BEARING ASSEMBLY

Hilarius S. Struttmann, St. Charles, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed June 29, 1972, Ser. No. 267,305
Int. Cl. F16c *23/08*
U.S. Cl. 308—194 8 Claims



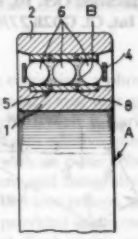
A self-aligning bearing assembly having a sealed lubricated bearing in which the bearing is constructed of an inner race means, spaced roller bearing assemblies, and a multiple piece outer race means. The outer race means presents a spherical outer surface. The housing can be a casting with an opening to receive the bearing and is formed with a pair of spaced, spherical surfaces, each being generated by an arc the radius of which has a center offset in two directions from the geometric center of the opening. The spaced, spherical surfaces are located opposite the zones of roller bearing contact with the inside of the outer race.

3,773,398

ROLLER BEARING

Kozo Sato, 89 Minami, 3-chome, Yamamoto-cho, Yao-shi, Osaka-fu, Japan

Filed Mar. 27, 1972, Ser. No. 238,451
Claims priority, application Japan, Feb. 25, 1972, 47/20757
Int. Cl. F16e *33/66*
U.S. Cl. 308—215 3 Claims



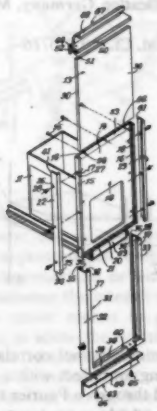
A roller bearing having rollers which are tubular metal cylinders. The inside of each of said metal cylinders is filled with a lubricant and small holes are bored directly through the metal cylinders. Alternatively, a plurality of metal cylinders is juxtaposed with minute spacings formed between adjacent metal cylinders, respectively. Accordingly, the lubricant is extruded outwardly from the inside of the metal cylinders through the small holes or minute spacings in accordance with the rotary movement of the roller bearing.

3,773,399

FRONT PANEL CONSTRUCTION FOR REFUSE COMPACTOR DRAWER

Charles E. Sulcek, Danville, Ky., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 27, 1972, Ser. No. 238,240
Int. Cl. A47b *47/00*
U.S. Cl. 312—204 15 Claims



A refuse compactor drawer having interchangeable front panel means permitting a customized installation. Different

front panel elements for use therein include wraparound panels and flat panel inserts bordered by a picture frame type edging means. The different panel structures are replaceable by the user as with common household tools to permit a customized installation. The drawer includes a front mounting panel and means for mounting the different decorative panel configurations selectively thereto.

3,773,400

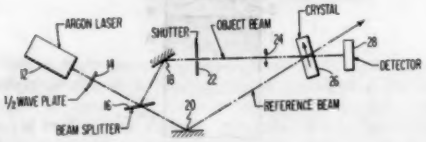
PROCESS FOR FIXING HOLOGRAPHIC PATTERNS IN ELECTRO-OPTIC CRYSTALS AND THE CRYSTALS PRODUCED THEREBY

Juan Jose Amodei, Langhorne, Pa., and David Lloyd Staebler, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 144,905, May 19, 1971, abandoned. This application Oct. 10, 1972, Ser. No. 295,851

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **7 Claims**



Phase holograms recorded in single crystal electro-optic materials such as undoped or doped lithium niobate and barium sodium niobate doped with iron and molybdenum are fixed so that the holographic pattern is not erased upon readout of the holographic information contained in the crystal. One method for fixing the pattern consists of heating the crystal at an elevated temperature either while or subsequent to writing the holographic pattern in the crystal. An alternate method for fixing the pattern consists of exposing the crystal to ionizing radiation during recording of the holographic information in the crystal.

3,773,401

COHERENT OPTICAL MULTICHANNEL CORRELATOR

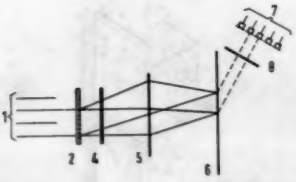
Nikolaos Douklias; Gerhard Winzer, and Ulrich Wolff, all of Muenchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed May 10, 1972, Ser. No. 252,022

Claims priority, application Germany, May 13, 1971, P 21 23 833.5

Int. Cl. G02b *5/18*

U.S. Cl. 350—162 SF **12 Claims**



A coherent optical multichannel correlator for identifying an object by permeating an object with a beam of coherent light which is projected through a Fourier transformation lens onto a filter hologram which reconstructs a reference beam projected on a photo detector when the object to be identified corresponds to the filter hologram characterized by providing a plurality of filter holograms arranged on the focal plane of the lens, and a diffraction grating modulator to modulate the light beam to control the selection of the filter hologram on which the light is projected. Modulation can be either by changing the grating constant to vary the angle phi between the diffracted beam and original beam axis or by rotating the orientation of the diffracted beams through an angle theta. Preferably, the diffraction modulating varies both the angle phi and the angle theta either continuously to have the diffracted beam follow a spiral path along the filter holograms or in a step-like manner to have the diffracted beam follow a path of concentric circles along the filter holograms. The modulator can be a pair of rotatable diffraction gratings, a pair of rotatable diffraction gratings which are thin phase holograms, or a pair of diffraction gratings, one being a volume-phase hologram and the other a thin (phase) hologram. The modulator can also be a fixed grating of electro-optical material which has a grating pattern with a grating constant and orientation which are controlled by the application of an electrical or a magnetic field, or some other means that shifts the illuminating beam on an angle phi.

3,773,402

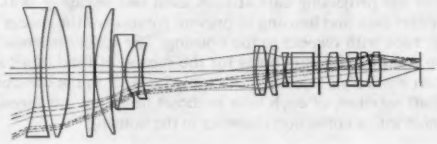
PANCRATIC LENS

Helmut Gela, Sudstadt, and Trude Muszumanski, Vienna, both of Austria, assignors to Karl Vockenhuber and Raimund Hauser, Vienna, Austria

Filed Sept. 15, 1970, Ser. No. 72,462

Int. Cl. G02b *15/14, 9/34*

U.S. Cl. 350—184 **4 Claims**



The lens comprises a rear lens unit having a fixed focal length and a pancratic lens supplement having a variable magnification factor. The pancratic lens supplement comprises a stationary, positive first lens unit, an axially displaceable, negative second lens unit succeeding the first lens unit, an axially displaceable, positive third lens unit succeeding the second lens unit, and a stationary, negative fourth lens unit succeeding the third lens unit. The second and third lens units are adjustable to a first position, in which the lens has a smallest focal length f_{Gmin}, and to a second position in which said lens has a largest focal length f_{max}. The third lens unit has in both the first and second positions a magnification factor β_3 meeting the following conditions:

$$\frac{f_{Gmin}}{2f_{III}} \leqslant -\beta_{3min} \leqslant \frac{f_{Gmin}}{f_{III}}$$

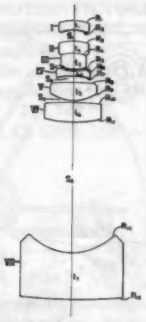
$$\beta_{3max} \approx -1$$

wherein f_{III} is the focal length of the third lens unit. The pancratic lens supplement further comprises means for displacing the second and third lens units to the first and second positions through a first range in accordance with a first function selected to maintain the object focal plane of the lens constant and through a second range in accordance with a second function selected to vary the distance from the object focal plane to the first lens unit.

3,773,403
SIX COMPONENT INVERTED TELEPHOTO PROJECTION LENS

Hadrian B. Lechner, North Chili, and Lynn L. Van Orden, Holley, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,489
Int. Cl. G02b 9/62
U.S. Cl. 350—215 5 Claims

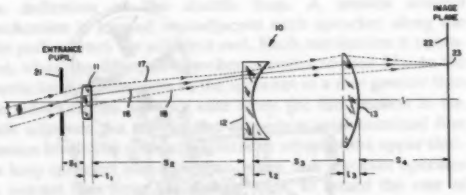


A six component *f*/2.4 inverted telephoto projection or camera lens has seven elements, of which the second and third are a doublet. The first five components form a positive group and are widely separated from a thick negative singlet. Four examples are disclosed. The lens has a magnification ratio of 1:75.

3,773,404
TELECENTRIC LENS

Duncan Thomas Moore, Rochester, N.Y., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed June 30, 1972, Ser. No. 268,145
Int. Cl. G02b 9/16, 13/22
U.S. Cl. 350—226 1 Claim

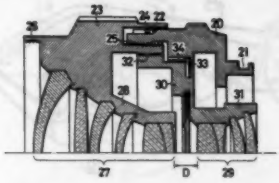


A multi-element, telecentric lens for use in a laser deflection system, or the like. The lens comprises a front plano-convex element, a center plano-concave element, and a rear plano-convex element all of specified aperture and radii of curvature. A laser beam entering the entrance pupil of the lens is brought to a focus at the image plane in such a manner that the chief ray, and hence the image cone, is normal to the image plane, regardless of the angle of the laser beam as it enters the entrance pupil of the lens.

3,773,405
DEVICE FOR DISPLACING PHOTOGRAPHIC LENS

Shigeaki Sugano, Tondabayashi, Japan (584), assignor to Minolta Camera Kabushiki Kaisha, Minamiku, Osaka, Japan

Filed May 10, 1972, Ser. No. 251,875
Int. Cl. G02b 7/02
U.S. Cl. 350—252 4 Claims

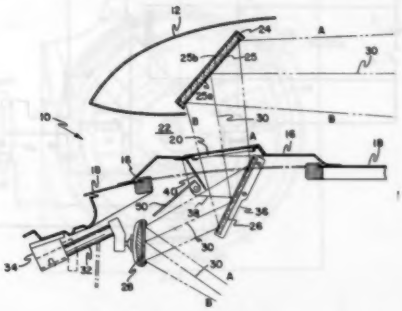


A displacing device comprises a photographic lens divided into a front lens group and a rear lens group with an air space interposed therebetween which is variable by the displacement of the two lens groups relative to each other, a focus ring displaceably engaged with an outer tube of the lens by a first method of displacement and integrally formed with a frame for holding one of the two lens groups, and an inner tube in engagement with means provided in the outer tube for regulating axial displacement and displaceably engaged with the focus ring by a second method of displacement, the inner tube being integrally formed with a frame for holding the other lens group.

3,773,406
REARVIEW PERISCOPE FOR VEHICLES

John D. Baumgardner; Wayne Vandenbrink, and Jerry A. Yonker, all of Holland, Mich., assignors to Donnelly Mirrors Inc., Holland, Mich.

Filed July 30, 1971, Ser. No. 167,599
Int. Cl. G02b 5/08
U.S. Cl. 350—302 22 Claims



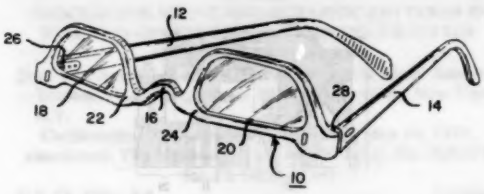
An improved rear view periscope system for vehicles including three mirrors, at least one of which is mounted within the vehicle. The improvements comprise an electrically conductive coating, deposited on or within a transparent cover means mounted between the interior and exterior of the vehicle, to heat the cover means to prevent fogging; safety breakaway means to allow the rotation or separation of the second mirror on or from its supporting brackets upon impact; a shield to prevent the reflection of overhead light rays by the first mirror without first having been reflected by the other mirrors and to limit the driver's field of vision to exclude portions of the mirror supports; and a day/night conversion filter to reduce the intensity of the light reflected through the periscope system.

3,773,407

EYE GLASSES

Elizabeth J. Stoner, 6950 Lemington Ave., Pittsburgh, Pa.

Filed May 22, 1972, Ser. No. 255,677
Int. Cl. G02c *3/00, 5/00*
U.S. Cl. 351—41 3 Claims



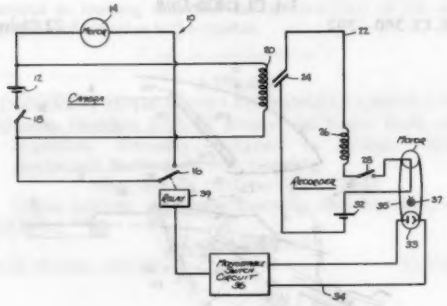
A pair of eye glasses with a nose bridge and a pair of temples wherein the bottom of each glass forms a straight perpendicular line from the base of the nose bridge connecting the two glasses together.

3,773,408

TAPE AND FILM SYNCHRONIZING APPARATUS

Peter V. O. Lawson, New York, N.Y., assignor to Optasound Corporation, New York, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,437
Int. Cl. G03b *31/04*
U.S. Cl. 352—16 12 Claims



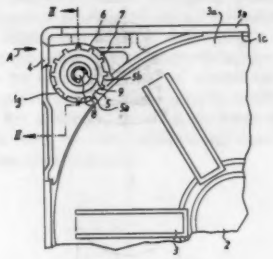
A movie camera-tape deck or recorder synchronization apparatus. The camera includes a control circuit having a manual and an electrically operated switch. The manual switch controls the flow of electrical energy to a coil which when energized closes a relay in the control circuit of the tape deck. With the relay closed a solenoid is energized which places the pinch roller on the tape deck in engagement with the tape and current is directed to the tape deck motor. Thus, sound is recorded on the tape in the tape deck. The tape includes sprocket holes and means are provided for producing a pulse each time a sprocket hole moves past a certain location. These pulses close the electrically operated switch in the camera circuit so that the camera motor receives power and thus the camera and tape deck are synchronized with each other.

3,773,409

CONTAINER FOR PHOTOGRAPHIC FILM OR THE LIKE

Josef Pfeifer, Unterhaching; Horst Eigner, and Wilfried Hofmann, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 21, 1972, Ser. No. 246,259
Claims priority, application Germany, Apr. 22, 1971, P 21 19 690.7
Int. Cl. G03b *23/02*
U.S. Cl. 352—75 10 Claims



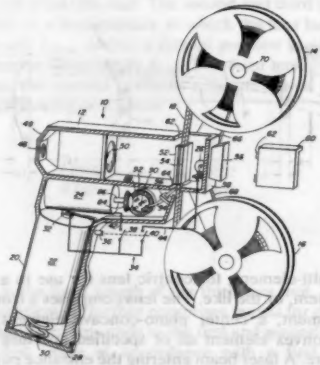
A container for convoluted photographic film has a housing which is provided with an opening for introduction or withdrawal of film. A light trap which is inwardly adjacent to the opening includes a roller which is provided with axially parallel peripheral ribs and a block having a concave surface which is adjacent to a portion of the peripheral surface of the roller to form therewith an arcuate channel wherein the film advances on its way into or from the chamber. The concave surface of the block is provided with several recesses separated by partitions which form a labyrinth for total reflection of light which happens to penetrate into the channel. At least the roller can be withdrawn from the housing to thus enlarge the passage through which the film can be withdrawn from the interior of the housing so that the container can be used for storage of unexposed film in a motion picture camera or as a receptacle for exposed film in a motion picture projector or as a device for storage of rolls of exposed and developed photographic film.

3,773,410

MOVIE VIEWER

Luis Carrara, 73 Greenwood St., Lawrence, Mass.

Filed June 1, 1972, Ser. No. 258,763
Int. Cl. G03b *21/00*
U.S. Cl. 352—129 2 Claims



A battery-operated, hand-held movie viewer is provided for individual viewing. The viewer has a piston-shaped configura-

tion to facilitate holding and viewing through a lens at the rear end thereof. An internal lighting system illuminates the film fed through the housing and driven by a motor-operated indexing mechanism. A film with two rows of side-by-side frames is employed. One row of frames is run in a direction reverse to that of the other row, with the images in the frames along one row being inverted with respect to those of the other row. Thus, the film can be run in either direction by merely changing the position of the reels without rewinding.

3,773,411

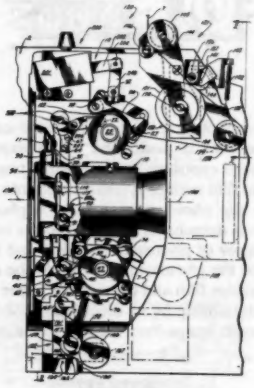
FILM CONTROL IN MOTION PICTURE PROJECTORS

James B. Henderson, Monrovia, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of Ser. No. 211,021, Dec. 22, 1971, Pat. No. 3,748,030. This application Oct. 16, 1972, Ser. No. 297,749

Int. Cl. G03b *1/00*

U.S. Cl. 352—166 **18 Claims**



In one embodiment, a motion picture projector includes a film supply reel, an upper shuttle loop sprocket, a gate assembly which includes a frame-by-frame film advance mechanism, a lower shuttle loop sprocket, and a film takeup reel; these projector components are disposed serially along a film path which traverses an optical axis within a shuttle loop defined between the sprockets. The reels are of very large capacity and have substantial inertia when fully or even partially loaded.

In this context, the invention provides mechanisms for controlling film tension at the sprockets to preserve the film and the definition of the shuttle loop. A tension control mechanism is located nextadjacent each sprocket along the film path toward the adjacent reel. Each mechanism is operative, when the adjacent sprocket operates to feed film to the shuttle loop, to feed film to the sprocket at a rate greater than the sprocket film advance rate when the film tension in the path adjacent the mechanism exceeds a predetermined film tension level. The control mechanism adjacent the upper shuttle loop sprocket also functions, when that sprocket operates to extract film from the shuttle loop, to retard the rate at which film is taken from the upper sprocket in response to the presence in the adjacent film of a tension level in excess of a predetermined level.

Film handling apparatus is provided for the film within the shuttle loop and is operatively disengaged from the film during operation of the projector to display a film. During rewind and stand-by modes of projector operation, the film handling apparatus is operatively engaged with the film to define a film path between the sprockets which is of definite length. This apparatus includes means for disabling the frame-by-frame film advance mechanism when the apparatus is disposed to define the length of film between the sprockets.

3,773,412

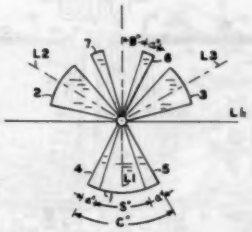
NON-REGULAR FIVE BLADE SHUTTER

Eugene Li-Chun Yang, McMurray, Pa., assignor to Viewlex, Inc., Holbrook, N.Y.

Filed Dec. 2, 1970, Ser. No. 94,514

Int. Cl. G03b *9/10*

U.S. Cl. 352—219 **5 Claims**



A non-regular five blade shutter for motion picture projectors which provides a composite of a two blade shutter which gives maximum light, and a three blade shutter which provides minimum flicker. The present shutter transmits more light than a three blade shutter without undesirable light modulation or flicker.

3,773,413

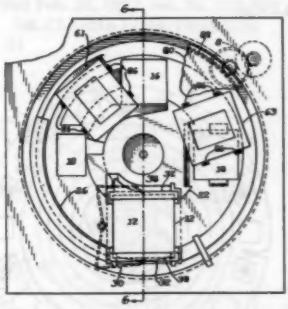
SLIDE TRANSPORT DEVICE

Carl C. Costanza, Chicago, Ill.; Walter W. Weber, Des Plaines, Ill.; Frank W. Betlejewski, Chicago, Ill.; and Richard Frystak, Park Ridge, Ill., assignors to Bell & Howell Company, Chicago, Ill.

Division of Ser. No. 860,384, Sept. 23, 1969, Pat. No. 3,659,934. This application July 6, 1971, Ser. No. 160,020

Int. Cl. G03b *23/06*

U.S. Cl. 353—112 **18 Claims**



A device for transporting slides in a horizontal plane to be projected by a slide projector.

3,773,414

SLIDE LOADER

Thomas Kowalski, Denver, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

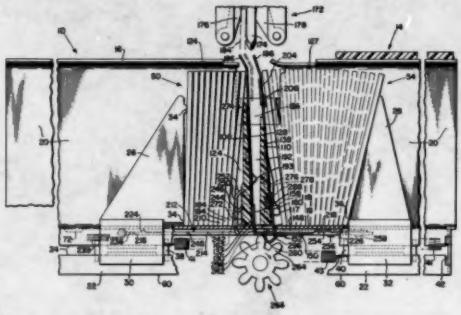
Filed Jan. 5, 1971, Ser. No. 103,979

Int. Cl. G03b *23/00, 23/04*

U.S. Cl. 353—116 **10 Claims**

A slide loader having a U-shaped casing supporting a stack of slides therein, a spring biased shuttle plate movable by a slide indexing mechanism along a side of the casing

to a latched position with the casing, said shuttle plate being connected to a slide changer of a display device and operable to effect a release of the shuttle from said latched position to a position in which a force applied by the shuttle



is effective to bias the second and remaining slides in the stack away from the loading slide as the latter is moved out of the casing into the display device, thereby allowing free passage of the leading slide from the casing to the display device.

3,773,415

RECORD FOR AN AUDIO-VISUAL DEVICE

George F. Carabet, Palos Verdes Peninsula; Andrew M. Holland, Santa Monica; Joseph P. Morris, Huntington Beach, and William B. Pester, Palos Verdes Peninsula, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed July 16, 1971, Ser. No. 163,160
Int. Cl. G03b *21/00*
U.S. Cl. 353—120 4 Claims

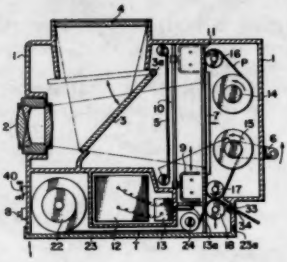
A record for an audio-visual device includes a recorded-message carrier portion and a picture carrier portion immovable with respect to each other and including a plurality of interleaved sound tracks having spaced-apart lead-in grooves with pictures mounted on the picture carrier in locations having the same spaced-apart relation as the lead-in grooves so that indexing of the record to bring a particular picture into viewing position automatically brings the correct lead-in groove into playing position.

3,773,416

ELECTROPHOTOGRAPHIC PORTABLE CAMERA

Teizo Kushima, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka-shi, Osaka-fu, Japan

Filed Nov. 24, 1971, Ser. No. 201,647
Claims priority, application Japan, Nov. 25, 1970, 45/117445
Int. Cl. G03g *15/22*
U.S. Cl. 355—3 R 4 Claims



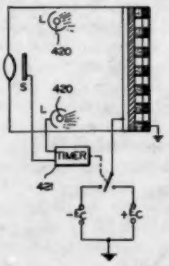
In an electrophotographic type portable camera a flexible photosensitive film is positioned at an exposure frame to receive an image exposure, and a flexible transfer paper having a dielectric film surface is transported into contacting relationship with the photosensitive film. A photosensitive film charge device is detachably mounted to the camera body and includes a supply of photosensitive film and a pressure plate biased to press the photosensitive film to the exposure frame. The photosensitive film and the transfer paper are pressed into contacting relationship by an electrically conductive roller to transfer the latent image from the film to the paper.

3,773,417

METHOD AND APPARATUS FOR APERTURE CONTROLLED ELECTROSTATIC IMAGE REPRODUCTION OR CONSTITUTION

Gerald L. Pressman, San Jose, and Thomas D. Kittredge, South San Francisco, both of Calif., assignors to Electroprint, Inc., Palo Alto, Calif.

Division of Ser. No. 776,146, Nov. 15, 1968, Pat. No. 3,647,291. This application July 28, 1971, Ser. No. 167,007
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 9 Claims



The invention basically comprises apparatus and methods relating to the field of electrostatics, and is concerned with electrostatic reproducing or constituting. Apertured screen means carry charge distributions in accordance with a pattern such that particles directed at the screen means pass therethrough under modulation control dictated by the pattern.

The invention further relates to apparatus and methods for constituting or reproducing images through the use of a multilayered screen consisting of an array of apertures. A propulsion field directs charged particles through the screen to a receiving medium preferably spaced at a distance from the screen. Charge distribution on the screen controls the flow of particles through the apertures, some of which are in effect blocked, partially blocked, unblocked, and enhanced, depending on the local charge level. Thus, it is possible to produce patterns of varying tone without contact with the printed or effected substrate.

3,773,418

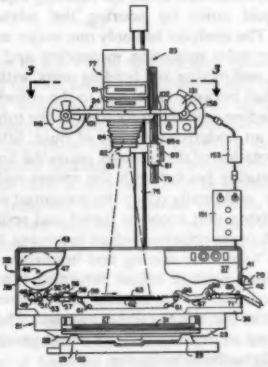
FILM ADVANCE DEVICE

Henry C. Hollwedel, Jr., San Francisco, Calif., assignor to George Lithograph Company, San Francisco, Calif.

Division of Ser. No. 18,421, March 11, 1970, Pat. No. 3,634,006. This application Aug. 6, 1971, Ser. No. 169,632

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 **11 Claims**



A machine for making printing plates or prints from positive or negative microfilm rolls has a table movable horizontally in two directions to adjust the position of a portion of an electrostatic copier which rests thereon. The copier has a paper cutter, transport, corona charger, exposure positioner, developer, squeegee, dryer and discharge but omits the scanner and associated elements normally employed in such machine. Above the copier is a photographic enlarger having its film holder replaced by apparatus which accurately advances microfilm frame by frame. The image of each frame is formed upon a cut sheet of copy paper at rest on the exposure positioner. The exposed sheet is then developed as the next sheet is advanced to exposure position and the next frame is advanced in the microfilm advance apparatus.

3,773,419

FACSIMILE AND MICROFILM APPARATUS

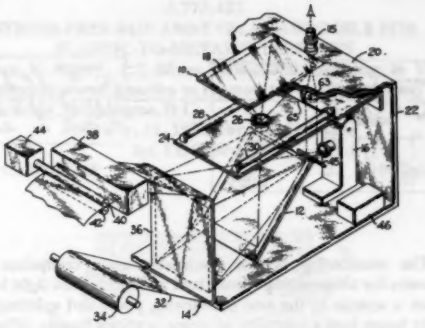
Frank L. Sumner, 15711 E. Alta Vista Way, San Jose, Calif., and Ted B. Slater, 1456 Lincoln Ave., San Jose, Calif.

Filed Aug. 9, 1971, Ser. No. 169,969

Int. Cl. G03b

U.S. Cl. 355—43 **10 Claims**

The disclosed embodiment of the present invention is a facsimile and microfilm apparatus for simultaneously recording photographically on a strip of microfilm and a strip of photosensitive paper. A beam splitter is employed for projecting an image from an object plane onto a strip of photosensitive paper at an image plane. An optical system and film drive system mounted behind the beam splitter is employed with a shutter as a microfilm camera and with an illumination source as a microfilm projector. When employed as a camera, the photosensitive paper forms an object plane for photographically recording an image of the original object on microfilm. When employed as a projector, the photosensitive paper



forms an image plane for recording the information contained on the developed film strip onto the photosensitive paper. A second beam splitter mounted in front of the projector is employed for viewing the film strip through an eyepiece so that the operator can select the appropriate frame on the film strip.

3,773,420

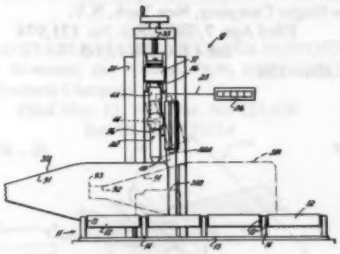
APPARATUS FOR MEASURING THE THICKNESS OF A METAL OXIDE COATING ON A GLASS ARTICLE

Gary D. Conroy, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Feb. 28, 1972, Ser. No. 229,939

Int. Cl. G01n *21/34;* **G01b** *7/06*

U.S. Cl. 356—51 **12 Claims**



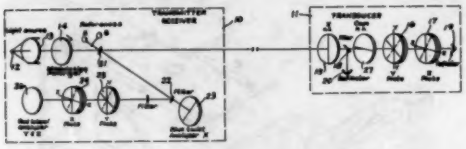
Apparatus for measuring the thickness of a metal oxide coating on the surface of a glass article, wherein the apparatus is provided with a measurement head which contains a light source (preferably of ultraviolet light) and a detector responsive to reflected light from the source. Both the source and the detector are maintained in a fixed close-spaced relationship with a measurement plane defined by the head and residing on the surface of the article to be measured. Adjustable mounting means are provided to secure the head to an article holding support so that different sizes of articles can be quickly and accurately measured, and so that coatings can be measured on various inclined surfaces of the articles.

3,773,421

MONITORING RELATIVE DISPLACEMENT

John George Gievers, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Sept. 30, 1964, Ser. No. 400,596
Int. Cl. G01b 11/26
U.S. Cl. 356—152 5 Claims



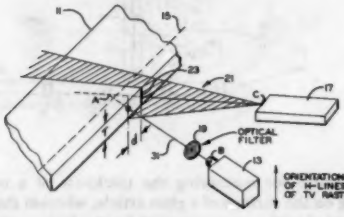
The monitoring system disclosed herein comprises apparatus for transmitting a polarized and modulated light beam from a source at the one monitoring point and splitting the light beam into a plurality of beam portions having different spectral ranges or colors. Each color is directed through one or more transducers, positioned at the other monitoring point, which modify the polarization of the light beam portion. Each transducer is of a type such that the amount of birefringence depends upon the angle which the transducer is rotated about its sensitive axis from an initial position, and the transducer is substantially insensitive to rotations about any other coplanar axis. The beam portions of different colors are combined in a beam and reflected to analyzers adjacent the light source where they are again separated into colors and analyzed separately to determine the change in polarity due to birefringent action. A signal is produced which is a measure of the degree of angular displacement. This signal can be utilized to control servo motors for restoring the two monitoring points to their original relative positions. The analyzing of the portions of light beam is preferably accomplished at the first monitoring point where the beam source is positioned.

3,773,422

CALCULATING LINEAR DIMENSIONS FROM TV IMAGES

Gus Stavis, Croton on Hudson; Robert A. Flower, White Plains, and Donald Z. Blau, City Island, all of N.Y., assignors to The Singer Company, New York, N.Y.

Filed Apr. 7, 1971, Ser. No. 131,974
Int. Cl. G01b 11/00
U.S. Cl. 356—156 6 Claims



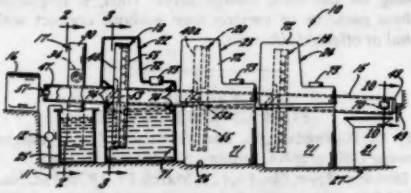
A video mensuration system wherein actual linear dimensions of objects may be calculated from the dimensions of video images of the objects without direct measurement of the camera to object distance. A beam of light is projected in a thin sheet to intersect the object across the dimension to be measured. The intersection appears as a line on the TV image and the actual dimension may be calculated from other known distances and geometric relationships.

3,773,423

AUTOMATIC ANALYZER

Clifford C. Hach, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Filed Aug. 22, 1972, Ser. No. 282,729
Int. Cl. G01j 3/46; G01n 1/00; G02f 3/04
U.S. Cl. 356—181 11 Claims



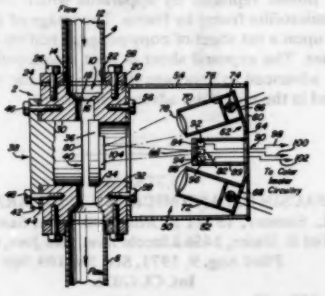
An automatic analyzer which combines a measured volume of a liquid sample with measured volumes of reagents in proper order, mixes and times the reacting liquids, and senses resulting liquid color by pouring the mixture through a colorimeter. The analyzer has only one major moving part — a driven center tube mounting measuring and feeding units, mixing units, and mixing and holding units, with the tube serving as a conduit between units and to the colorimeter. A measuring and feeding unit, upon rotation of the tube, dips a lifting passage into an underlying supply of fluid, lifts a quantity of the fluid by rotation of the passage, pours the liquid into an adjustable measuring pocket with the excess spilling back into the container, and finally pours the measured volume into the tube. The mixing unit receives liquid and spills it through a tortuous path upon rotation before returning the then mixed liquid to the tube. The mixing and holding unit spills liquid along a spiraling passage before returning it to the tube and thus holds the liquid for the number of tube revolutions equaling the coils in the spiral of the passage. The tube itself is slightly inclined so that liquid flows under gravity from unit to unit eventually to the colorimeter.

3,773,424

DEVICE FOR COLOR MEASUREMENT OF LIQUIDS IN CONTINUOUS FLOW

Paul J. Selgin, Bethel, Conn., assignor to Neotec Corporation, Rockville, Md.

Filed Aug. 24, 1972, Ser. No. 283,340
Int. Cl. G01j 3/50; G01n 21/26
U.S. Cl. 356—181 8 Claims



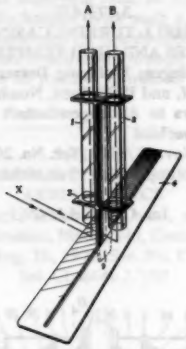
A flow cell for a colorimeter contains a flat reflective surface in parallel spaced confronting relation to the flat surface of a viewing window. A fluid under test flows between the confronting surfaces where the fluid is subjected to incident light. Reflectance by the fluid determines colorimetric measurement. Standards for calibration can be inserted in the flow cell without stopping fluid flow.

3,773,425

VISUAL COMPARATOR SYSTEM

Richard Paul Bentley, Box 786, Tupper Lake, N.Y.

Filed Oct. 26, 1971, Ser. No. 167,956
Int. Cl. G01j 3/52
U.S. Cl. 356—191 3 Claims



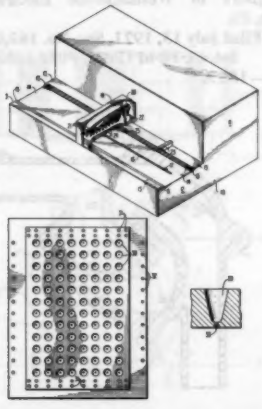
The invention of the Visual Comparator System herein disclosed consists of two axially transparent and/or translucent samples, one of which is usually a reference sample and one a test sample, a sample holder to hold the samples in axial alignment, and a comparator card with a surface colored and/or shaded in a pattern dictated by the comparison being made. The comparator card is moveably held or mounted in such a way that light reflected from separate portions of its surface pass through the two samples to the operator's eye allowing a comparison based on color and/or optical density to be made.

3,773,426

BACTERIAL GROWTH DETECTOR

Courtney Payne Mudd, Charlottesville, Va., assignor to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed Feb. 22, 1972, Ser. No. 227,980
Int. Cl. G01n 21/22
U.S. Cl. 356—205 8 Claims



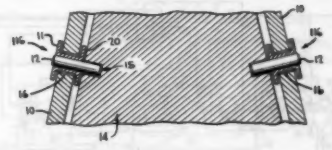
A device for detecting bacterial growth in a plurality of dilutions. A test tray containing a plurality of test wells, each well having a different dilution, is inserted in a frame so that light passes through each well and onto a photo-transistor. If bacterial growth is present in the test well the light is attenuated, and the drop detected electronically, and punched on a card. A row of sensors comprising a phototransistor for each of eight dilutions simultaneously reads the samples, light being conducted to each sensor by means of optical fiber bundles.

3,773,427

STRESS-FREE ROD AND EYELET ASSEMBLY FOR PLASTIC-TO-METAL INTERFACES

George K. Lucey, Jr., Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 21, 1971, Ser. No. 210,423
Int. Cl. F16c 11/00
U.S. Cl. 403—165 10 Claims



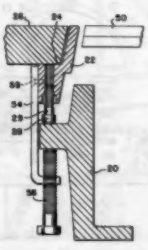
Artillery fuze radomes are ordinarily made from thermoplastics. The major drawbacks from thermoplastics is their inherent tendency to stress-crack. This invention provides a valid means of avoiding stress-cracking in military hardware that involves a metal-to-plastic joint. This means is to use a stress-free assembly comprising a stress-free rod joint designed for low setback and spin projectiles. Stress free attachment is accomplished by moulding a hole larger than the joint in the plastic radome. An eyelet with an inner diameter smaller than the rod and an outer diameter smaller than the hole in the plastic is fastened into the hole. Lips at the periphery of each end of an eyelet secure the eyelet in place in the hole in the plastic radome. When the rod is forced into the eyelet the outer diameter expands, however the moulded hole in the plastic is sufficiently oversized such that binding by the eyelet is prevented. Several rods are forced into eyelets and inserted into grooves in the fuze body thereby securing the nose cone to the fuze. The assembly developed by these pieces is stress-free because the rod-eyelet assembly is free to rotate in the hole.

3,773,428

ADJUSTABLE MANHOLE COVER SUPPORT

Harold M. Bowman, Bay Village, Ohio, assignor to National Utility Products Company

Filed Mar. 12, 1971, Ser. No. 123,650
Int. Cl. E02d 29/14
U.S. Cl. 404—26 9 Claims



An adjustable manhole cover support including a peripheral frame adapted for placement in the opening of a manhole

housing, and a peripheral manhole adjusting ring disposed on the frame. The ring has a peripheral inner seat for receiving the manhole cover. Adjustment means is provided between the frame and the ring to adjust the height therebetween and thus adjust the height of the manhole cover as may be needed when the roadway is resurfaced. The adjusting means may be set screws, stepped inserts or spacers contained in a U-bracket.

3,773,429

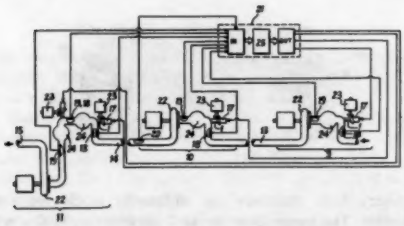
MEANS FOR PUMPING LIQUIDS IN A PIPELINE

Pierre Hayward, 6, rue des Ecoles, Saint-Cloud, France

Filed Mar. 24, 1971, Ser. No. 127,506

Int. Cl. F04d *15/00*; **F01d** *15/10*

U.S. Cl. 415—11 **5 Claims**



A pump for use in pumping liquids along a pipeline and having particular use in pumping hydrocarbons along extensive pipelines. The pump can be mono- or multi-stage with each stage having a rotor mounting pivotal paddles disposed on a cone of revolution whose axis is coincident with the axis of the rotor. Mechanical means such as gearing is provided to pivot the paddles, which gearing is operated by a servomotor. This servomotor is controlled by adjustment means which receive signals from measure devices or meters located in the pipe or pipeline and which measure the hydraulic parameters of flow in the pipeline.

3,773,430

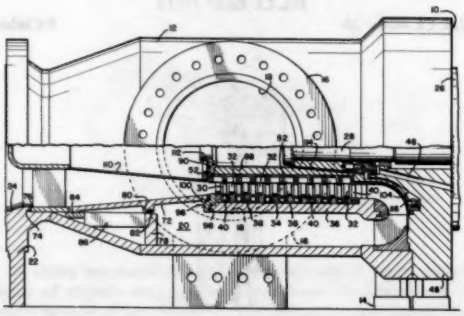
GAS COMPRESSOR

Fred Canova, Maple Brook Hollow, Phillipsburg, N.J.; Leroy M. Krouse, and Hanns Hornschuch, both of Easton, Pa., assignors to Ingersoll-Rand Company, New York, N.Y.

Filed Mar. 17, 1972, Ser. No. 235,501

Int. Cl. F01d *3/00*, *5/26*

U.S. Cl. 415—104 **15 Claims**



The gas compressor is of the axial flow type, having a plurality of stages of compression, and an overhung rotor. Turbine nozzle-type stator vanes are used, resulting in a foreshortening of stage axial length, and eliminating a requirement for guide vanes at the diffuser entrance. A housing and frame enclose and support the working elements of the compressor, the elements being so supported and enclosed as to allow for relative movements of the housing without causing distortion of said elements.

3,773,431

MULTIPLE SHELL TURBINE CASING FOR HIGH PRESSURES AND HIGH TEMPERATURES

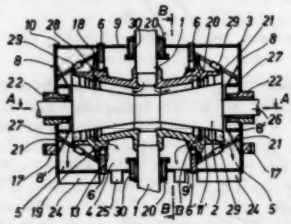
Hans Bellati, Wettingen; Wolfgang Domer, Kirchdorf; Hans Huber, Neuenhof, and Willi Rutti, Nussbaumen, all of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 18, 1971, Ser. No. 200,008

Claims priority, application Switzerland, Dec. 8, 1970, 18308/70

Int. Cl. F01d *25/26*

U.S. Cl. 415—108 **4 Claims**



A multiple shell casing for a turbine operating at high pressures and temperatures includes a multi-stage inner casing in the form of a guide blade carrier which is divided along an axial plane, and an outer casing also divided along that same plane. The outer casing is fabricated from sheet metal parts welded together, the inner casing is supported by a pair of axially spaced load-bearing rings which surround it, and these rings which extend through, and also support, the outer casing are anchored onto the turbine foundation.

3,773,432

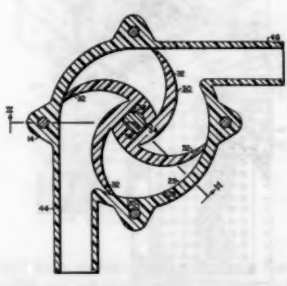
SINGLE STAGE BI-DIRECTIONAL PUMP

Shin-Kien Chow, and Kent T. S. Tzou, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 13, 1971, Ser. No. 162,044

Int. Cl. F04d *17/08*; **F01d** *1/30*

U.S. Cl. 415—152 A **5 Claims**



This invention discloses a bi-directional turbine pump where rotation of a pump impeller in one direction provides a discharge to one discharge line and rotation of the pump impeller in the other direction provides a discharge to another

discharge line. The pump is specifically designed to provide a lower quantity of delivered fluid when rotating in one direction, and is optimized for a given impeller to provide the highest quantity of delivered fluid possible for a given speed of rotation for the opposite discharge. The maximized fluid delivery is obtained by placing both discharges tangential to the pump chamber and situating the pump inlet on the same side, with this inlet supplying fluid to the pump mediately between the two discharges. With such a configuration, not only is discharge maximized for one direction of impeller rotation, but also no fluid is delivered through that discharge line which should be in an inactive condition based on impeller direction.

3,773,433
EXTENDIBLE ROTOR BLADE FOR ROTARY WING AERIAL DEVICE

Richard H. Hollrock, Simsbury, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

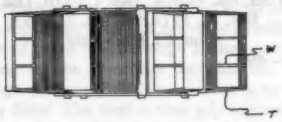
Filed Aug. 18, 1971, Ser. No. 172,772
Int. Cl. B64c *27/50*
U.S. Cl. 416—87 **8 Claims**

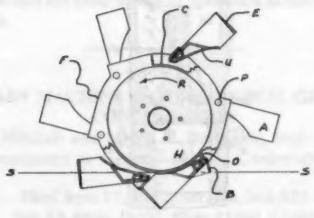
An extendible rotor blade for a rotary wing aerial device includes telescoping inner and outer blade sections with the outer section being movable relative to the inner section from a retracted to an extended position under the influence of centrifugal force as the blade rotates. A substantially non-resilient stretchable member between the two blade sections stretches beyond its elastic limit as the outer section moves to its extended position thereby absorbing energy and slowing the movement of the outer section to reduce the impact load which would otherwise occur upon engagement of the limit stops if the outer section were permitted to move freely relative to the inner section.

3,773,434
ARTICULATED WATER-WHEEL

John S. Mason, Baltimore, Md.

Filed Nov. 30, 1971, Ser. No. 203,214
Int. Cl. B63h *5/02*
U.S. Cl. 416—119 **9 Claims**



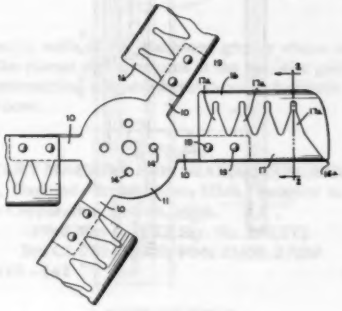


An improvement in water-wheels in which their buckets are pivoted to their hubs so that they can swing freely from a position tangent to the hub, where they can contain a mass of water and accelerate it to produce thrust, to a fully extended position, where they can discharge their mass of water, swing freely out of the water, and counter-rotate to absorb the impact of re-entering the water.

3,773,435
FLEXIBLE BLADE FAN

John A. Wooden, Indianapolis, Ind., assignor to Brookside Corporation, McCordsville, Ind.

Filed July 23, 1971, Ser. No. 165,625
Int. Cl. F04d *29/38*
U.S. Cl. 416—132 **3 Claims**

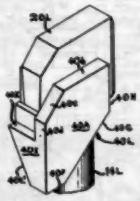


Disclosed is a flexible blade fan structure in which the flexible fan blades are stabilized by an overlying lamination formed to provide fingers curved and of tapering configuration. In the dynamic condition, that is, when the blade is rotated and undergoing flexure, the radius of curvature of the fingers is less than the radius of transverse curvature of the fan blade so that the fingers act as beams of uniform strength (or constant stress beams) point loaded by deflection of the fan blade under load. The rubbing between the contiguous surfaces of the blades and laminations, in the dynamic condition, serves to damp vibratory forces.

3,773,436
SHROUD FOR ASPHALT MIXER PADDLE

David L. Lutz, Cupertino, Calif., assignor to Kenco Engineering Incorporated, Cupertino, Calif.

Filed Sept. 14, 1971, Ser. No. 180,267
Int. Cl. B01f *7/04*; **B28c** *5/14*
U.S. Cl. 416—210 **18 Claims**



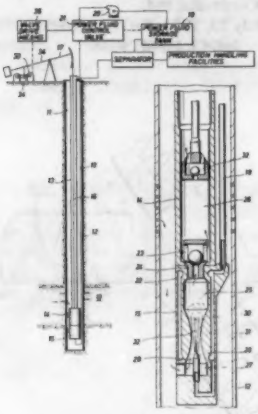
A shroud to protect the shank of a mixing paddle of a heavy duty asphalt mixer in which the shroud is attached to the mixer tip without exposing the head of the bolt for presenting a smooth surface to the asphalt to increase the wear of the shroud and to reduce the drag on the mixing paddles for conserving power.

3,773,437

JET PUMP SUPERCHARGING OF OIL FIELD PLUNGER PUMP

George O. Suman, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed May 17, 1972, Ser. No. 254,276
Int. Cl. F04b *23/04, 21/04*
U.S. Cl. 417—87 6 Claims



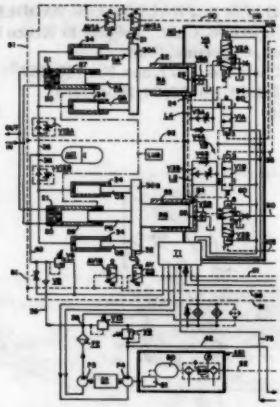
Method and apparatus for improving volumetric efficiency of a positive displacement type well pump by supercharging the pump suction with a jet pump to prevent vapor lock.

3,773,438

WELL STIMULATION APPARATUS AND METHOD

Richard W. Hall, Springfield; Richard H. Kerr, West Milton, and Paul W. Padrutt, Springfield, all of Ohio, assignors to Kelsey-Hayes Company, Springfield, Ohio

Filed Apr. 29, 1971, Ser. No. 138,568
Int. Cl. F04b *35/00*
U.S. Cl. 417—345 7 Claims



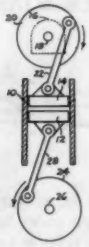
An intensifier unit includes a pair of sequentially operated reciprocating ram assemblies, novel valving systems for controlling the relative movement of the ram assemblies to effect an output of working fluid having a minimum of pressure fluctuations, and a novel pneumatic control system for controlling the valving systems in response to the positions of the ram assemblies. In the preferred embodiment, the unit is mounted on a truck for use in high pressure operations, such as well fracturing, erosion drilling, or the like, and the rams have relatively large diameters and relatively long strokes for providing a minimum of wear and fatigue cycles. In the method, the ram assemblies are returned quicker than they are extended, and are sequentially pressurized prior to initiation of their forward strokes and prior to the decompression of the stroke of the preceding working cylinder to provide an essentially uninterrupted pressure delivery of working fluid to the well.

3,773,439

RECIPROCATING IN-LINE MAGNETIC ACTUATOR

Francis R. Sheridan, 170-23 Pacific Ave., Spanaway, Wash.

Filed Sept. 1, 1972, Ser. No. 285,837
Int. Cl. H02k *7/06*
U.S. Cl. 417—415 10 Claims



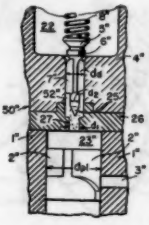
A reciprocating magnetic actuator comprises a pair of suitably guided magnets axially aligned with each other. A drive reciprocates one of the magnets between an advanced position and a retracted position. In its advanced position it exerts a magnetic influence on the second magnet causing the latter to alter its position. Upon retraction of the first magnet, a suitable drive connected to the second magnet restores it to its original position. The cycle then is repeated. In this manner reciprocating motion is imparted to the second magnet without physical contact with the first.

3,773,440

FUEL INJECTION PUMP CONSTRUCTION

Mataji Tateishi, Nagasaki, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 41,874, June 1, 1970. This application Dec. 22, 1971, Ser. No. 210,953
Int. Cl. F04b *7/04*
U.S. Cl. 417—490 2 Claims



A fuel injection pump includes a fuel pump plunger which is movable to direct the fuel under pressure through a passage which is regulated by a delivery valve. The delivery valve in-

cludes a collar portion which, upon the return movement of the delivery valve, causes a sucking back (or unloading) action on the fuel in a direction toward the pump plunger chamber. The invention provides means for varying the fuel flow area in the return direction of movement of the delivery valve in accordance with the lift of the delivery valve during its operative opening movement. In one arrangement the delivery valve is constructed to close one or more escape ports during its downward return movement for slowing the return flow of the fuel to the plunger chamber and in another embodiment the delivery valve includes an end portion which provides a variable throttling action on a port communicating with the delivery valve passage and the pump plunger chamber.

3,773,441

COMBINATION SAND BAILER AND FLUID PUMP WITH AUTOMATIC GRIT SEPARATOR AND LUBRICATOR

Arthur R. Schertz, 202 Supply Row, Taft, Calif.

Filed May 19, 1971, Ser. No. 144,918

Int. Cl. F15b *21/04*

U.S. Cl. 417—554 **11 Claims**

An automatic grip separator and lubricator for a tubing pump having reservoir means for automatically supplying grit-free fluid to the interface between the pump barrel and plunger. The vertically elongated fluid reservoir opens at its lower end into the stream of fluid being pumped effective to return grit gravitating from quiescent fluid in the reservoir. Air trapped in the top of the reservoir provides a resilient cushion to aid seepage of clean fluid through a filter cartridge and a passage leading to the interface between the barrel and plunger. Foreign matter separation is primarily by gravity and secondarily by filter. The dual-action grip separator is so effective that the pump can function as a sand bailer initially and then phase into the fluid pumping operation as the sand supply diminishes.

3,773,442

ROTARY MACHINE ROTOR SIDE SEAL GROOVE CONSTRUCTION

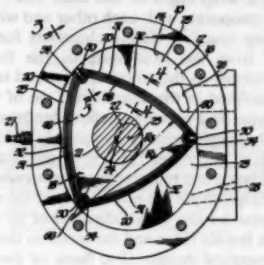
Alfred J. Mitchell and Mirko A. Bratkovic, both of Lansing, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Apr. 17, 1972, Ser. No. 244,823

Int. Cl. F01c *19/00;* **F04c** *15/00, 27/00*

U.S. Cl. 418—142 **4 Claims**

A rotor for a rotary machine has pairs of parallel side seal grooves in each rotor side extending between corner seal apertures also in each rotor side at the junction of adjoining peripheral rotor faces. Each pair of parallel side seal grooves is provided by an insert mounted in a single machined groove in each rotor side cooperating with radially inwardly and outwardly facing walls of the machined groove whose radii pass through the corner seal apertures at the opposite groove ends without intersecting the peripheral faces to facilitate machining the groove.



3,773,443

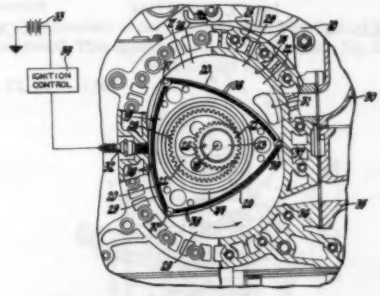
ROTARY MACHINE SIDE SEAL ARRANGEMENT

Robert J. Haglund, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 4, 1972, Ser. No. 250,272

Int. Cl. F01c *19/00;* **F04c** *15/00, 27/00*

U.S. Cl. 418—142 **3 Claims**



A rotor for a rotary machine has side seals that are arranged on the sides of the rotor in staggered radial locations to reduce housing wear, sharpness of any steps in the housing wear pattern and thereby reduce side seal wear and also corner seal wear.

3,773,444

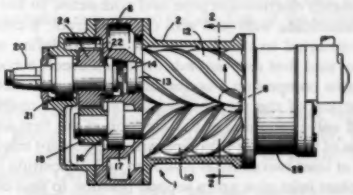
SCREW ROTOR MACHINE AND ROTORS THEREFOR

Hans-Juergen Koch, Ter., Easton, Pa., assignor to Fuller Company, Catasauqua, Pa.

Filed June 19, 1972, Ser. No. 263,914

Int. Cl. F01c *1/16;* **F04c** *1/10, 17/12*

U.S. Cl. 418—201 **16 Claims**



A screw rotor machine and rotors therefore wherein the machine includes a casing defining a working space having a

pair of parallel intersecting bores with a fluid inlet port and a fluid outlet port. A pair of cooperating rotors are mounted within the working space with each having helical lands and grooves with a wrap angle of less than 360°. The rotors are positioned to cooperate with each other and with the sidewalls of the working space to define chambers for working fluid which move from the fluid inlet to the fluid outlet and decrease in volume as the rotors are rotated to thereby compress fluid confined in the chambers. One of the rotors is of the female type and includes helical lands and intervening grooves which lie substantially completely inside the pitch circle of the rotor. The other rotor is of the male type and includes helical lands and intervening grooves which lie substantially completely outside the pitch circle of the male rotor. In a plane transverse to the longitudinal axes of the rotors, the grooves in the female rotor and the lands on the male rotor are a novel assymetrical design. One flank of the groove in the female rotor and one flank of the land on the male rotor are generated. The other flank of the groove in the female rotor is defined by a circular arc. The major portion of the other flank of the land on the male rotor is defined by a circular arc and a minor portion is line generated. Thus, the leading flank of the male rotor land is substantially circular and the trailing flank is generated.

3,773,445

MOULDING APPARATUS

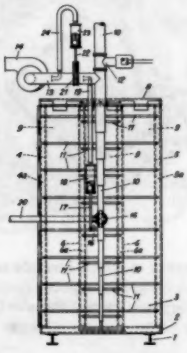
Hans Kernen, Engehaldenstrasse 69, Bern, Switzerland

Filed Jan. 4, 1972, Ser. No. 215,295

Claims priority, application Switzerland, Jan. 14, 1971, 577/71

Int. Cl. B29d *27/04*

U.S. Cl. 425—4 **2 Claims**



The invention concerns a moulding apparatus provided with a cooling system and comprising at least one mould chamber having walls defining a mould cavity, at least one wall defining a wall cavity and also defining a plurality of apertures to allow communication between the mould cavity and the wall cavity; a steam distribution means comprising a steam distributor pipe having a first and a second section; a plurality of steam connecting pipes extending from the first and second sections of the steam distribution pipe and connected to the said wall to communicate with said wall cavity thereof; a coolant inlet pipe connected to the distribution pipe to define a junction between said first and second sections thereof; a coolant output means comprising a coolant outlet pipe connected to the first section of the steam distribution pipe; a multi position shut-off valve mounted at the junction of the first and second sections of the distribution pipe with the coolant inlet pipe and having at least two shut-off positions, a first position to shut off the coolant inlet pipe and a second position to shut off the first section of the steam distribution pipe; and a multi position shut-off valve switch-over means for switching from first said shut-off position to second said shut-off position and vice versa.

3,773,446

DEVICE FOR MOULDING PARTS TO BE SINTERED

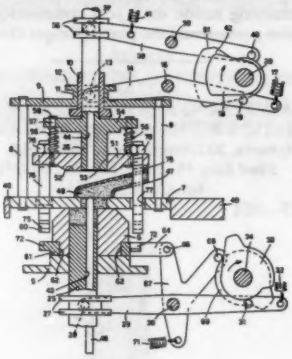
Bartolomeo Borrini, Ivrea, Italy, assignor to Ing. C. Olivetti & Co., S.P.A., Ivrea, Italy

Filed Aug. 24, 1971, Ser. No. 174,325

Claims priority, application Italy, Sept. 10, 1970, 70042 A/70

Int. Cl. B30b *11/02*

U.S. Cl. 425—78 **10 Claims**



A device for moulding parts to be sintered by compressing powdered materials held between a fixed die and a movable die. A pair of punches extending through the dies compresses the powdered material. A pressure plate operated by the punch extending through the movable die engages the movable die and is also locked to the fixed die during the compression stroke of the punches to insure that the dies do not separate during the compression stroke.

3,773,447

APPARATUS FOR PRODUCING CEMENT SHEETS

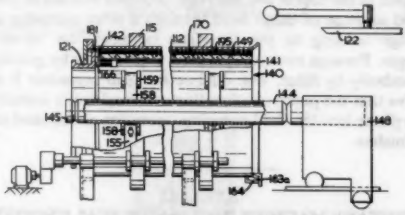
William C. Barratt, 595 Sheppard St., Niagara Falls, Ontario, Canada

Continuation-in-part of Ser. No. 166,779, July 28, 1971, abandoned. This application Jan. 3, 1973, Ser. No. 320,770

Claims priority, application Great Britain, Feb. 1, 1972, 4712/72

Int. Cl. B28b *21/08*

U.S. Cl. 425—86 **21 Claims**



Apparatus for producing a cement sheet, including a rotatable mould into which a cement mix is fed to form a soft, centrifugally moulded cylinder, which is then removed from the mould, divided longitudinally, and laid out flat to harden. The soft cement cylinder is removed by means of a mandrel inserted into the cylinder while in the mould. During removal from the mould, the cement cylinder is held onto the mandrel either by vacuum applied to perforations in the wall of the

mandrel, or by means of a liner initially placed within the mould and which surrounds the cylinder while it is removed from the mould on the mandrel. Slitting means are provided, movable relative to the mandrel to form a longitudinal slit in the soft cylinder on the mandrel after its removal from the mould. The apparatus is particularly useful for producing small quantities of asbestos cement sheets with special laminations or surface effects. Apparatus in accordance with the invention may be used for producing sheets of flowable hardenable material other than cement.

3,773,448

DOUGH DIVIDER

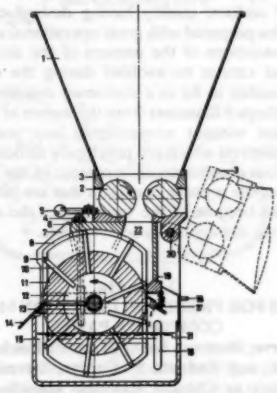
Pieter Poot, Uijterwaard 2, Heiloo, Netherlands

Filed Apr. 28, 1971, Ser. No. 138,242

Claims priority, application Netherlands, Apr. 29, 1970, 7007651

Int. Cl. A21c *5/00*

U.S. Cl. 425—93 **4 Claims**



A dough dividing machine with a rotor having radially extending blades movable into and out of the rotor to sever metered quantities of dough supplied to the machine. The blades and the rotor slots receiving them are provided with a lubricant before engaging the dough, preferably the blades are immersed in an oil bath during an idle period.

3,773,449

APPARATUS FOR PRODUCING CONTINUOUS ROUND JACKETED LIGHTGUIDES

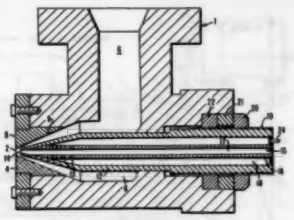
Thomas C. Hager, Washington, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 043,701, June 5, 1970, Pat. No. 3,646,186, which is a continuation-in-part of Ser. No. 600,919, Dec. 12, 1966, abandoned. This application Sept. 29, 1971, Ser. No. 184,898

Int. Cl. B29d *3/00;* **B29f** *3/00*

U.S. Cl. 425—114 **2 Claims**

An apparatus is provided for protectively jacketing a bundle of polymeric optical filaments which includes an extrusion device having guide means therewithin and an orifice so constructed and arranged so that a protective jacketing of polymeric material contacts and flows about said bundle of



optical filaments advancing continuously through said extrusion device before said polymeric material flows through the orifice of said extrusion device.

3,773,450

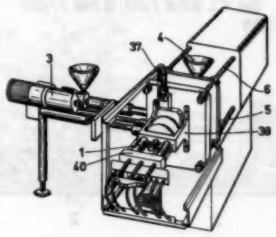
ARRANGEMENT AT INJECTION MOULDING MACHINE FOR RENDERING POSSIBLE MULTI-COMPONENT MOULDING

Soren Baltsar Egon Svanfors, Nils Gustafsgatan 25, Gislaved, Sweden

Continuation of Ser. No. 808,966, March 20, 1969, abandoned. This application Dec. 6, 1971, Ser. No. 204,924

Int. Cl. B29f *1/12*

U.S. Cl. 425—130 **1 Claim**



Apparatus for the molding of multicomponent parts by injection molding. One mold half is rotated so as to present a number of mold cavity sections to successive positions at which different colors or materials are injected. All of the colors or materials are injected simultaneously at their respective locations, and after a mold cavity section has received material from all of the injectors, the finished article is ejected. The rotation mechanism consists of a rack and gear that is actuated in response to the ejection of the finished article.

3,773,451

SCREW-TYPE INJECTION-MOLDING MACHINE

Friedrich Bernd Bielfeldt and Jurgen Neureuther, both of Germany, assignors to Firma Eckert & Ziegler GmbH, Weissenburg, Germany

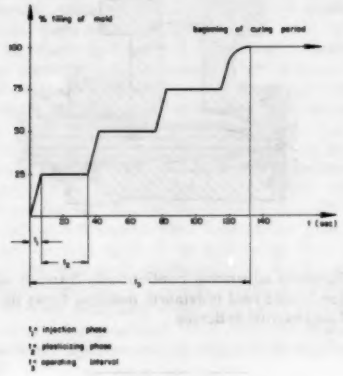
Filed June 28, 1971, Ser. No. 166,912

Int. Cl. B29g *3/00*

U.S. Cl. 425—147 **1 Claim**

An injection-molding machine with a rotatable and axially displaceable feed screw, serving to plasticize the moldable

material and thereafter to inject it into a mold, is advanced and retracted repeatedly during a single molding operation to inject the plasticized material in several stages into the mold



which is maintained at a relatively low temperature until the mold is filled. The termination of injection and the switchover to curing temperature occurs in response to a slight expansion of the mold upon complete filling.

3,773,452

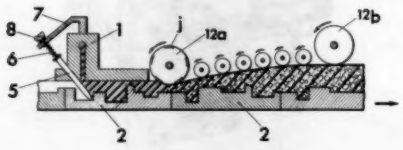
APPARATUS FOR MOLDING THERMOPLASTIC MATERIALS

Jun Taga, Kawasaki, Japan

Division of Ser. No. 36,518, May 12, 1970, Pat. No. 3,689,612. This application June 27, 1972, Ser. No. 266,696

Int. Cl. B29f 1/00; B29d 27/00

U.S. Cl. 425—220 **6 Claims**



Apparatus for molding synthetic thermoplastic polymeric organic resin which also may be foamable comprising successively placing under pressure, the molten resin which is extruded from a die of an extruder in cavities to be formed between the die and continuously moving plural metallic moulds, and preventing a leakage of the molten resin out of the cavity in rear of the die by means of one or more barriers which are movable simultaneously or independently with each other, said barrier being adapted to be, at its tip end, always in contact with an inner floor of the metallic mould or held leaving a slight space therefrom and being adjacent to the rear portion of a die orifice thereby to enable the flow line of resin to be substantially perpendicular in relation to the direction of movement of the metallic mould and thus to be short and an apparatus for performing said method. There is also disclosed an apparatus as mentioned above, wherein in front of the die is provided a pressing cooling roll or endless belt having a function of adjusting a cooling temperature thereby to effect the solidification of the molten resin while pressing and cooling, whereupon the molded product is withdrawn. Thereby, the thermoplastic materials can be continuously molded without leakage of materials to give a molded article having excellent properties, especially stress-free property.

3,773,453

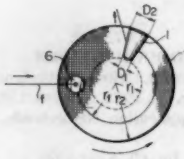
APPARATUS FOR THE MANUFACTURE OF CRIMPED BULKY FILAMENTS

Hazime Hino, Osaka; Magoichi Saki, Itami; Yoshihiko Maezawa, Kyoto; Tsutomu Nakamura, Minohara, and Nobuo Takahashi, both of Osaka, all of Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 5,224, Jan. 23, 1970, abandoned. This application Mar. 23, 1971, Ser. No. 127,330

Int. Cl. D02g 1/16

U.S. Cl. 425—223 **12 Claims**



Improved apparatus by which a variety of crimped bulky filaments of uniform quality having desired crimp characteristics can be prepared with great operational advantages regardless of variations of the amount of the shrinkage of the filaments that cannot be avoided during the operation, by making it possible to fix in a stationary manner the point of separating crimped filaments from the screen at a desired and optional point without necessitating any performance of operational controls which are practically difficult or impossible, and various disadvantages in respect of the quality of the product and of the process operation that are inevitable in the known process because of the variations of the amount of the shrinkage of the filaments can be overcome.

3,773,454

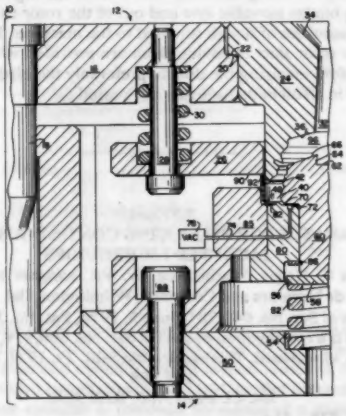
APPARATUS FOR PRECISION INJECTION MOLDING OF COMPOSITE PARTS

Leslie A. Horve, Hanover Park; Jerry D. Reichenbach, Carpentersville, and Kenneth F. Gabrys, Streamwood, all of Ill., assignors to Chicago Rawhide Manufacturing Company, Elgin, Ill.

Filed Sept. 20, 1971, Ser. No. 181,859

Int. Cl. B29f 1/00

U.S. Cl. 425—242 **15 Claims**



Molds and methods for injection molding of precision composite articles. The molds are particularly adapted for use in

making highly precise oil seals having a rubber body or lip bonded to a metal mounting flange. According to the invention, means are provided in the molds for precise centering of mold parts, for insuring predetermined flow patterns of the rubber during molding, for venting gases formed during molding, for evacuating the molding cavity before it is filled with fluent rubber, and for directing the material flow so as to fill the molding cavities completely. Certain preferred mold constructions include relatively movable parts for permitting cavity evacuation and for eliminating "flash", while others include full circumference, diaphragm or so-called umbrella type runner systems. The molds are arranged to facilitate tearing of the rubber scrap from the finished part along a predetermined line as the mold parts open for part removal. The methods include flowing the rubber through various passages under controlled conditions to manufacture parts of uniform quality.

3,773,455

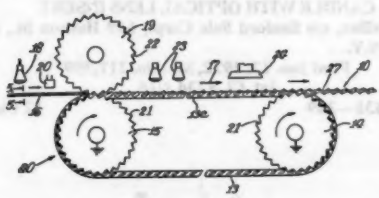
APPARATUS FOR FORMING PLASTIC LOUVER SCREEN

Harold Warp, Chicago, Ill., assignor to Flex-O-Glass, Inc., Chicago, Ill.

Division of Ser. No. 871,436, Oct. 13, 1969, Pat. No. 3,645,830, which is a division of Ser. No. 660,478, Aug. 14, 1967, abandoned. This application Nov. 19, 1971, Ser. No. 200,297

Int. Cl. B29c *17/14*

U.S. Cl. 425—290 **4 Claims**



Apparatus for forming a plastic louver screen from a flat sheet of plastic material, said screen having a plurality of cut louvers twisted from the flat configuration of the sheet and permanently set without residual stress in the twisted configuration. The disclosed apparatus for forming the plastic louver screen includes a forming support member, means for softening the plastic sheet and cutting the plastic sheet to conform to the forming support member, thereby to provide in the sheet a louver screen configuration. The forming support member may comprise a plurality of block members having upper surfaces defining the metal louver screen configuration 0r a continuous belt defining the metal louver screen configuration. The louver screen is formed of a settable plastic. In one form, the louver screen includes a layer of metal which may be embedded therein or define a surface thereof.

3,773,456

APPARATUS FOR THE PRODUCTION OF FLARING PORTIONS OF HOLLOW BODIES

Richard Salz, Dreisel near Dattenfeld, and Johann Karp, Mondorf, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

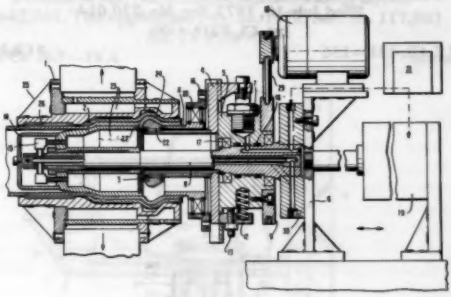
Filed July 19, 1971, Ser. No. 163,589

Claims priority, application Germany, July 23, 1970, P 20 36 607.8

Int. Cl. B29c *17/02*

U.S. Cl. 425—384 **16 Claims**

An apparatus for forming socket and bead configurations in tubular bodies including a divided external mold, an expanding mandrel having two parts between which a sizing ring is provided. The sizing ring is rotatably mounted on a slide element supported in a rotatable guide member. By setting the guide member into rotation the sizing ring scribes a circular path about the central axis of the expanding mandrel. A radi-



al-displacing cylinder is provided for shifting the slide element and thus sizing ring 3 in the radial direction. Also disclosed is the method resulting from the use of the above apparatus.

3,773,457

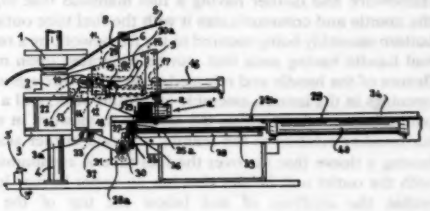
APPARATUS FOR EXTRACTING, STACKING AND DISCHARGING MOULDED CUPS, JARS AND SIMILAR FROM MOULDING APPARATUS

Daniel Badoux, and Robert Carry, both of Decines, France

Filed June 19, 1972, Ser. No. 263,853

Int. Cl. B29c *17/04*

U.S. Cl. 425—388 **9 Claims**



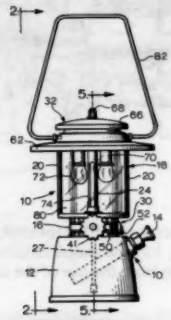
A device for moulding cups of synthetics material by means of an upper mould member and a reciprocable lower mould member is provided with an apparatus for extracting, stacking and discharging moulded cups for the moudling apparatus. The apparatus has a suction nozzle, which, when horizontal, attaches itself by suction to the wall of a cup on the upper part after lowering of the lower mould part. A pneumatic jack moves the nozzle backwards away from the mould and simultaneously, a cam slot causes a tube mounting the nozzle to rotate about the tube axis so as to swing the nozzle into a vertical position. This action swings the cup into a horizontal position and begins to insert the cup into the open end of what was hitherto the last cup in a horizontal row (a stack on its side). The cup is released from the nozzle by cutting off the suction. As the lower mould part rises in a new moulding operation, the movement pivots an arm which moves a pusher bar back to pack the last formed cup into the horizontal stack. Each reciprocation of the lower mould part actuates a counting device which upon counting a prescribed number of cup moulding operations causes another pusher to be pneumatically lifted through a slot in a plate supporting the horizontal stack and be moved pneumatically along the slot to push the horizontal stack away.

3,773,458

PORTABLE CONVERTIBLE MANTLE-LANTERN, CAMP STOVE

J. Willard Spotts, Huntsville, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 10, 1972, Ser. No. 270,014
Int. Cl. F21h *1/00*
U.S. Cl. 431—156 2 Claims



A portable fuel dispensing unit having a fuel tank and valve for metering fuel therefrom through a tube to a fuel outlet, and a top open annular framework upstanding from the fuel tank in spaced surrounding relation to the tube, characterized by separate lantern and burner assemblies adapted to be used individually with the fuel dispensing unit for providing service as a lantern or a camp stove; the lantern assembly being unitary and having a hood that covers the open top of the annular framework and further having a fuel manifold that supports the mantle and communicates it with the fuel tube outlet, the lantern assembly being secured to the framework by a resilient bail handle having ends that can be separated upon manual flexure of the handle and released to be fitted through aligned openings in the lantern assembly and framework, and a transparent lens confined within the annular framework in spaced surrounding relation to the mantle; and said burner assembly having a sleeve that fits over the fuel tube in communication with the outlet and further that has an upper burner located within the confines of and below the top of the open framework.

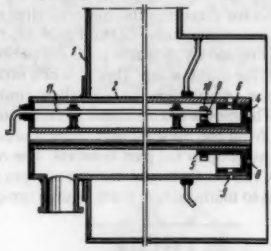
3,773,459

GAS BURNER

Rustam Berovich Akhmedov, Massiv Cherdantseva 2; Ilya Mordukhovich Goldberg, Massiv Chilanzar sektor 21, and Mingal imovich Mingareev, Massiv Chilanzar sektor 12, all of Tashkent, U.S.S.R.

Filed Aug. 1, 1972, Ser. No. 277,038
Int. Cl. F23q *9/08*
U.S. Cl. 431—280 1 Claim

The gas burner comprises a duct for the forced delivery of air. The duct contains a gas-feeding pipe with radial openings for the outlet of the gas. The pipe at the end facing inside the duct is closed with a plug having axial openings for the outlet of the gas. In addition, the pipe is provided with a gas-distributing valve having radial openings and axial openings for the outlet of the gas. The radial openings in the gas-feeding pipe coincide with the radial openings in the gas-distributing valve. The latter valve is rotatable about its longitudinal axis. The axial openings in the gas-distributing valve are so arranged that upon rotation of the valve its axial openings coincide with those of the plug, while the radial openings in the gas-feeding pipe are closed by the gas-distributing valve.

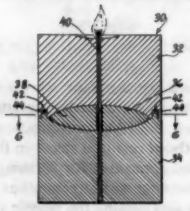


3,773,460

CANDLE WITH OPTICAL LENS INSERT

Andre Tellier, c/o Sanford Sale Corp., 619 Hudson St., New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,359
Int. Cl. F23d *3/16*
U.S. Cl. 431—289 12 Claims



A candle having an internal formation defining an optical lens to diffuse the candlelight through the body of the candle, and thereby to cause the candle to glow from internal illumination.

3,773,461

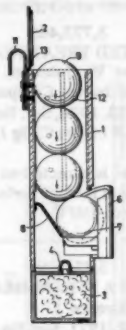
GOLF-BALL HEATER

Minoru Arimoto, 4-4 Futabacho, and Takao Fukui, 6-9 Ohashicho, both of Nagata-ku, Kobe, Japan

Filed June 29, 1971, Ser. No. 157,937
Claims priority, application Japan, Mar. 30, 1971, 46/22711 (utility model)
Int. Cl. F23d *21/00*
U.S. Cl. 432—185 7 Claims

A device for controlled heating of golf-balls, equipped with a compact cylindrical main body with a top-trap and lower ball-ejecting hinged door. The main body having in its bottom

part a heating device with which to apply necessary heat to the golf-balls stored in a vertically lined-up way in the cylinder.



Cold balls are inserted from above, in turn, in order to eject, by the action of a curved spring installed therein, properly heated balls at the lower opening.

3,773,462

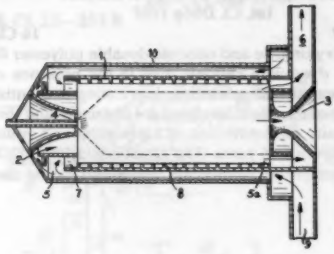
HEAT EXCHANGER

Raymond Waeselynck, Paris, France, assignor to Stein Industrie, Paris, France

Division of Ser. No. 813,438, April 4, 1969, Pat. No. 3,642,061. This application Feb. 22, 1971, Ser. No. 117,803

Int. Cl. F23l 9/04

U.S. Cl. 263—19 A 3 Claims



A heat exchanger from which is absent a dividing wall between an axial flow of hot fluid, preferably a flame, and an encircling spiral flow of fluid to be heated which is maintained separate by the centrifugal force due to its cyclonic flow and is contained by a refractory-lined wall which absorbs radiant heat from the hot fluid.

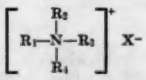
3,773,463

LUBRICATING, ANTISTAT AND DYE LEVELING AGENT AND PROCESS FOR TEXTILE MATERIALS

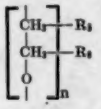
Sidney Cohen, Hillsdale, and Robert Edgar Wiman, Maplewood, both of N.J., assignors to Sybron Corporation, Rochester, N.Y.

Filed Apr. 18, 1972, Ser. No. 245,281
Int. Cl. D06p 1/88
U.S. Cl. 8—18 16 Claims

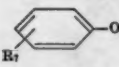
Both polyacrylonitrile and cationic dyeable polyester fibers and yarns are dyed with cationic dyes in the presence of an agent which operates as a leveling, lubricating and antistatic agent. Dyeings of excellent levelness are obtained, and there is a high uniformity of distribution of lubricating and antistatic agent on the fibers and yarns. The agent comprises (a) 30 to 80 parts of a quaternary ammonium compound having the formula:



where R_1 is a benzyl group or an alkyl group containing 1 to 14 carbon atoms, R_2 is a benzyl group or an alkyl group containing 1 to 14 carbon atoms, R_3 and R_4 are alkyl groups containing 1 to 3 carbon atoms and X^- is a water-solubilizing anion; and (b) 20 to 70 parts of a polyoxyethylene compound having the formula:



where n in an integer of about 6 to 15, R_5 and R_6 are etherifying or esterifying moieties of aliphatic alcohols containing 10 to 20 carbon atoms, aliphatic acids containing 10 to 20 carbon atoms or alkyl phenols of the type having the formula:



where R_7 is an alkyl group containing 8 to 12 carbon atoms. When either R_5 or R_6 is an alkyl phenol, the other moiety must be an aliphatic acid or an aliphatic alcohol.

3,773,464

ACID AND DIRECT DYES AND FLUORESCENT BRIGHTENER CONCENTRATES WITH THIOCYANATES AND ACETYLINIC ALCOHOL

Clemens Streck, Loudonville, N.Y., assignor to GAF Corporation, New York, N.Y.

Filed June 2, 1970, Ser. No. 46,849
Int. Cl. D06p 1/68
U.S. Cl. 8—93 12 Claims

Pourable, stable aqueous solutions to pastes consisting essentially of about 5–50% by weight of an acid dyestuff, a direct dyestuff or a flourescent brightening agent containing at least 1 sulfonic acid substituent and about 1–20% by weight of a water soluble thiocyanate such as ammonium thiocyanate. Such compositions are characterized by greater stability and fluidity and increased color value, as compared with a solution or paste, of the same concentration, of such dyestuffs but which do not contain a water soluble thiocyanate. The incorporation of a small amount, about 0.1–2% by weight, of an acetylenic glycol into such compositions, in the case of many dyestuffs further enhances the stability, fluidity and/or color value of the composition.

3,773,465

INHIBITED TREATING ACID

Bill R. Keeney, and Joe W. Johnson, Jr., both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Oct. 28, 1970, Ser. No. 86,978
Int. Cl. C23f 11/04; C23g 1/04, 1/06
U.S. Cl. 21—2.7 R 17 Claims

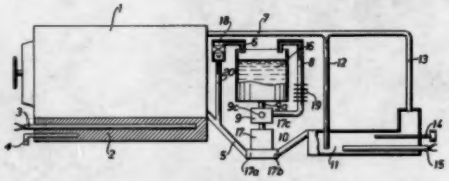
The present invention is directed to an inhibited treating acid for use in contact with ferrous surfaces at temperatures of from about 150°F to about 450°F.

3,773,466

ARRANGEMENT FOR A STEAM-HEATED AUTOCLAVE

Fritz Linder, Skarham, Sweden

Filed July 12, 1971, Ser. No. 161,760
Claims priority, application Sweden, July 20, 1970, 10020/70
Int. Cl. A61l 3/00
U.S. Cl. 21—94 4 Claims



A steam operated autoclave is disclosed having a circulating steam phase, a steam producing water container, a double cleading surrounding the interior of the autoclave and valves in the conduits between the different parts of the autoclave and its accessories for selective operation of first and second heat elements arranged in said double cleading and the water container for obtaining an improved efficiency of such autoclaves by automatic preheating of the double cleading before each sterilization.

3,773,467

MICROASSAY DIAGNOSTIC TEST METHOD

Shih-Tzy Yang, Justice; Sunny Edmund Egozi, Chicago, and Sam S. Yanari, Park Forest, all of Ill., assignors to Wilson Pharmaceutical & Chemical Corporation, Chicago, Ill.

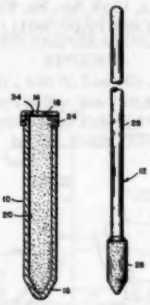
Filed Nov. 17, 1971, Ser. No. 199,737
Int. Cl. G01n 23/10, 33/16
U.S. Cl. 23—230 B 6 Claims

The method of determining the total iron binding capacity (TIBC) of human blood involves removing the iron content of an aliquot of blood, adding a solution of radioactive ferric cations to the iron free aliquot, incubating the mixture at a pH in the range of 7 to 9 to effectuate coupling of ferric cations and protein, measuring the initial radioactivity of the mixture, contacting the mixture with anion exchange resin to produce a solution free of unassociated radioactive ferric cations and measuring residual radioactivity of said solution free of unassociated radioactive ferric cations.

3,773,468
CENTRIFUGABLE EXTRACTION AND HOHOGENIZATION VESSEL

Roger W. Hubbard, 488 Winter St., Framingham, Mass., and William T. Matthew, 35 Grove St., Hopkinton, Mass.

Filed Apr. 3, 1972, Ser. No. 240,373
Int. Cl. G01n *1/04, 9/30*
U.S. Cl. 23—259 8 Claims

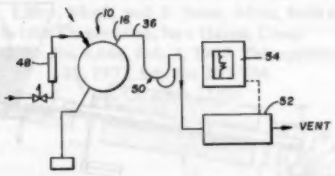


A glass tube closed at one end and open at the other, said open end being threaded, said tube being adapted, on the one hand, to receive a pestle slidingly within it, the interior surface of the tube and the exterior surface of the pestle being roughened so as to effect grinding of the material within the tube and, on the other hand, to receive a cap for closing the tube for shaking its content together with a solvent and for sealing the contents within the tube during centrifugation.

3,773,469
METHOD AND APPARATUS FOR DETERMINING THE AMOUNT OF CERTAIN COMPONENTS IN A SUBSTANCE, SUCH AS INORGANIC CARBON AND THE LIKE

Leland L. Hiser; Clarence A. Boldt, Jr.; David S. Tarazi, and Oscar Saenz, Jr., all of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed June 28, 1971, Ser. No. 157,451
Int. Cl. G01n *33/18*
U.S. Cl. 23—253 R 6 Claims

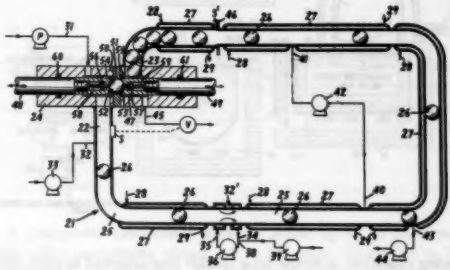


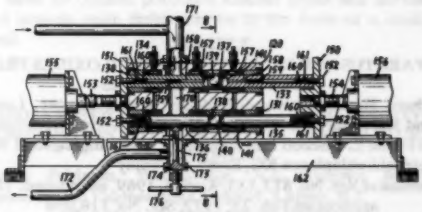
A carrier gas is bubbled at a constant rate through a pool of liquid reagent in a reactor to strip the pool of any gases formed therein. The carrier gas is introduced into the liquid below its surface to keep the liquid well mixed. A sample of the substance containing the component, the amount of which is to be determined, is injected into the reagent pool through the inlet of the carrier gas which diffuses the sample quickly throughout the liquid. The reagent and the sample react and produce a gas having the component as a constituent. The gas so produced and the carrier gas are passed through a device that can determine quantitatively the amount of the component in the gas.

3,773,470
APPARATUS FOR CONTINUOUS CHEMICAL REACTIONS

Georges Rouzier, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, France

Division of Ser. No. 725,102, April 29, 1968, Pat. No. 3,595,846. This application Mar. 8, 1971, Ser. No. 121,949
Claims priority, application France, May 2, 1967, 67104970
Int. Cl. C08F *1/98*
U.S. Cl. 23—252 R 9 Claims





A closed loop reaction tube is formed with a substantially constant interior cross section. A plurality of movable separators in the tube divide it into a plurality of separate cells. Materials for reaction are circulated through the tube in separate batches respectively confined in the cells. A plurality of reaction stations are provided at spaced locations along the tube, and at these stations the transported batches are successively acted upon. The tube has a point of origin and a terminal point connected by a lock for passing the separators from the terminal point to the point of origin while preventing passage of the materials, the latter being discharged from the tube. The materials are maintained under a pressure differential along the tube from the point of origin to the terminal point sufficient to maintain the tube full and to ensure the propulsion of the materials and separators through the tube at substantially the same velosity. Continuous chemical reactions involving successive batches of the materials thus occur as the materials traverse the tube.

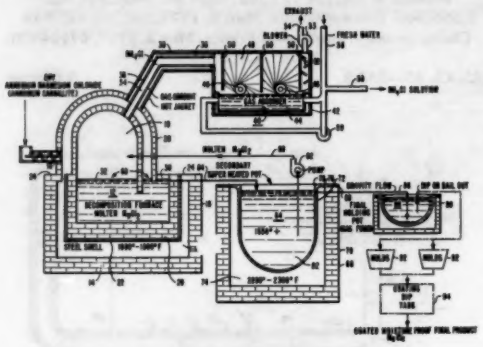
3,773,471
APPARATUS FOR MAKING ANHYDROUS MAGNESIUM CHLORIDE

James G. Macey, Salt Lake City, Utah, assignor to Pete Prestininzi, Long Beach, Calif.; Ruth G. Masey and Anne M. Masey, Salt Lake City, Utah; part interest to each

Division of Ser. No. 888,774, Dec. 29, 1969, Pat. No. 3,647,367. This application Oct. 18, 1971, Ser. No. 190,350
Int. Cl. B01j *1/00*
U.S. Cl. 23—277 R 1 Claim

Improved apparatus for the decomposition of ammonium carnallite and the recovery of purified magnesium chloride is

provided. The apparatus comprises a decomposition chamber sealed from the atmosphere and contamination, a superheating chamber, means for transferring molten magnesium chloride between the decomposition chamber and the superheating chamber, a screw-type feeder line adapted to pass ammonium carnallite into the chamber, a holding chamber, and means for passing molten magnesium chloride to and from the holding chamber and for recovering the anhydrous product.



3,773,472

APPARATUS FOR REMOVING SULPHUR OXIDES FROM INDUSTRIAL WASTE GAS

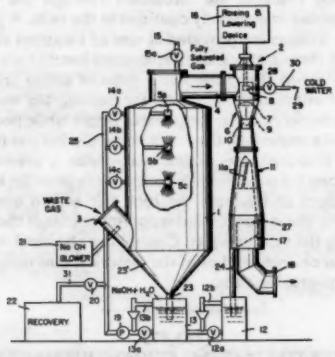
Gerhard Hausberg, Essen-Bredeney; Georg Kruger, Lunen, and Karl-Martin Bentgraf, Essen, all of Germany, assignors to Firma L. Bischoff Bau kompletter Gasreinigungsund Wasserruckkuhlanlagen KG, Essen, Germany

Division of Ser. No. 813,133, April 3, 1969, abandoned. This application Feb. 23, 1972, Ser. No. 118,098

Claims priority, application Germany, Apr. 6, 1968, P 17 69 125.7

Int. Cl. B01d *47/00;* **B03c** *3/00;* **B01j** *1/00*

U.S. Cl. 23—283 **2 Claims**



An industrial waste gas containing sulphur oxides is admixed with an alkaline powder (or contains finely-divided particles of solids from the furnace) and is saturated with a wash liquid consisting primarily of water admixed with an alkali or alkaline salt. Then the saturated gas is adiabatically and continuously expanded to precipitate the wash liquid around the powder particles. The precipitated droplets are collected from the cleansed gas and, if desired, recirculated as wash liquid after sedimentation of solids. The gas and wash liquid are passed through a venturi clearance around a body above which a cold-water spray is provided.

3,773,473

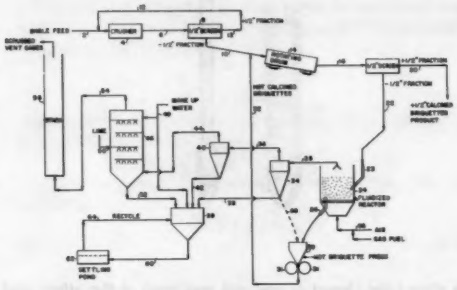
BENEFICIATION AND HOT BRIQUETTING OF PHOSPHATE ORES BY REMOVING -400 MESH FINES

Richard I. Howard, and James K. Sullivan, both of Pocatello, Idaho, assignors to FMC Corporation, New York, N.Y.

Filed Oct. 2, 1969, Ser. No. 870,454

Int. Cl. C05b *19/00;* **B01j** *1/00*

U.S. Cl. 23—293 R **3 Claims**



A beneficiated, calcined, phosphate agglomerate, useful as a phosphorus furnace feed is produced by crushing phosphate shale to substantially —½ inch, heating and calcining the crushed shale in a fluidized bed, removing a relatively phosphorus-poor fine fraction overhead from a relatively phosphorus-rich coarse fraction remaining in the fluidized bed, withdrawing a portion of the heated, coarse fraction from the fluidized bed and hot briquetting it under pressure to form strong, calcined phosphate agglomerates.

3,773,474

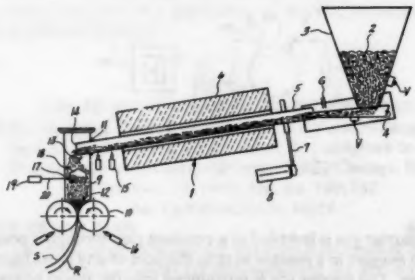
MULTI-PHASE STRIP FROM PARTICLE AND POWDER MIXTURES

Werner G. Horn, 201 Rockview Dr., Cheshire, and Robert M. Neumann, 40 Ramsdell St., New Haven, both of Conn.

Filed Apr. 26, 1971, Ser. No. 137,489

Int. Cl. B32b *15/02, 31/20;* **B22f** *31/14*

U.S. Cl. 29—182.8 **16 Claims**



An article or strip formed by compacting coarse metal particles or a mixture of coarse metal particles and a fine powder. The invention is particularly directed to the formation of multi-phase strip having a matrix formed of compacted coarse metal particles and at least one second phase formed of a compacted powder. The apparatus and process of forming the strip are also part of the invention. The particles have a diame-

ter of 150 to 1200 microns and, preferably, have a length-to-diameter ratio of 3:1 to 10:1. The powder material has a diameter of less than 50 microns. Particle size and density segregation effects are minimized by adding powder to the particles at a point in close proximity to the compacting means. The invention is particularly applicable to copper and copper base alloys and is uniquely suited to produce anode matrix combinations in accordance with U.S. Pat. No. 3,574,081.

3,773,475

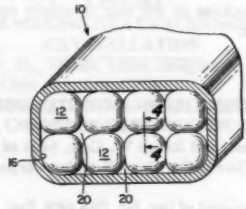
STRUCTURE INCORPORATING PRESSURIZED SPHERES

Baxter C. Madden, Jr., 680 N. Loop Dr., Camarillo, Calif.

Continuation-in-part of Ser. No. 716,654, March 27, 1968, abandoned. This application Feb. 3, 1972, Ser. No. 223,247

Int. Cl. B32b *33/00*

U.S. Cl. 29—192 **8 Claims**



A lightweight strong structure and method of making same in which a number of units such as thin walled pressurized spheres are interconnected at points of contact with each other to provide a strong and buoyant structure. In practicing the method the units are provided with a heat responsive pressure producing ingredient and are then assembled into a mass, preferably having a great number of sphere to sphere contact points. They are maintained in said relationship while being deformed as by expansion to force each unit into an increased area of contact with its neighboring unit, and the units are bonded at such areas of contact. If desired, the units may also be bonded to the inner walls of an enclosure employed to maintain the units in assembled relationship during such deformation or expansion so that the enclosure forms a part of the completed structure.

3,773,476

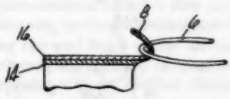
ELECTRICAL COMMUTATOR

Eugene A. Lilley, Virgil, and J. Jones, Alton, both of Ill., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 8,666, Feb. 4, 1970. This application Jan. 28, 1972, Ser. No. 221,734

Int. Cl. B32b *15/00*

U.S. Cl. 29—196.3 **2 Claims**



A new and improved electrical commutator comprising a plurality of spaced apart plates wherein said plates have at least one outwardly projecting finger for holding an armature wire and wherein the plates are a composite comprising a copper base alloy containing at least 0.0343 per cent by weight silver, balance essentially copper integrally bonded to a side of an iron base alloy.

3,773,477

CLAD ALUMINUM BASE ALLOY

Michael K. McGinnis, Lower Burrell, and Paul F. Wallace, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Continuation of Ser. No. 147,624, May 27, 1971, abandoned, which is a continuation of Ser. No. 787,523, Dec. 27, 1968, abandoned. This application Aug. 14, 1972, Ser. No. 280,119

Int. Cl. B32b *15/20*

U.S. Cl. 29—197.5 **5 Claims**

A composite clad sheet product made up of an aluminum base alloy containing about 2.5 to 6% zinc, about 0.4 to 3% magnesium, about 0.2 to 1% manganese, and balance essentially aluminum, clad with a magnesium-free aluminum base alloy containing about 0.5 to 1.8% manganese. The product may have an outside porcelain enamel finish and an inside cured organic resin finish and be in the form of a cooking utensil.

3,773,478

MIDDLE DISTILLATE FUEL CONTAINING ADDITIVE COMBINATION TO INCREASE LOW TEMPERATURE FLOWABILITY

Nicholas Feldman, Woodbridge, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.

Filed Mar. 17, 1969, Ser. No. 807,965

Int. Cl. C10l *1/18*

U.S. Cl. 44—62 **5 Claims**

The low temperature flowability of a middle distillate petroleum fuel oil boiling within the range of about 250° to about 700° F. at atmospheric pressure is improved by adding to the fuel oil from about 0.1 to about 3 percent of an essentially saturated hydrocarbon fraction which is substantially free of normal paraffinic hydrocarbons and which has a number average molecular weight in the range of about 600 to about 3,000. The fuel oil also contains a polymeric additive, usually in a lesser amount than said high molecular weight paraffinic fraction, said polymeric additive being characterized by having an average of at least one long alkyl side chain for every four carbon atoms along the polymer chain. This additive combination is unique in that the polymeric additive does not interfere with the flow improving properties of the high molecular weight hydrocarbon, and the high molecular weight hydrocarbon does not interfere with the pour point depressing properties of the polymeric additive, whereas such interference is encountered when using other conventional polymeric pour depressants such as a copolymer of ethylene and an unsaturated ester.

3,773,479

MOTOR FUEL CONTAINING A SUBSTITUTED ASPARAGINE

Peter Dorn, Lagrangeville, and Kenneth L. Dille, Wappingers Falls, both of N.Y., assignors to Texaco Inc., New York, N.Y.

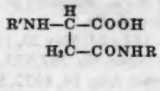
Continuation-in-part of Ser. No. 40,401, May 25, 1970, abandoned. This application Dec. 6, 1971, Ser. No. 205,337

Int. Cl. C10l *1/18, 1/22*

U.S. Cl. 44—71 **11 Claims**

Motor fuel composition comprising a mixture of hydrocar-

bons in the gasoline boiling range containing a minor amount of a substituted asparagine having the formula:



in which R and R' each represent a secondary or tertiary alkyl or alkylene radical having from about seven to about 20 carbon atoms.

3,773,480

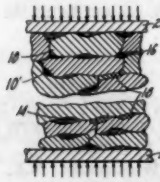
ABRASIVE MEANS AND METHOD OF MANUFACTURE

Elisha Winthrop Hall, Scituate, Mass., and Walter A. Sheehan, Westminster, Md., assignors to F. L. & J. C. Codman Company, Rockland, Mass.

Continuation of Ser. No. 753,253, Aug. 16, 1968, abandoned, which is a continuation-in-part of Ser. No. 456,647, May 18, 1965, abandoned. This application July 19, 1971, Ser. No. 164,012

Int. Cl. B24d *3/32*

U.S. Cl. 51—295 **2 Claims**



Abrasive members formed with resiliently extensible and compressible preformed synthetic foam body particles compressed and bonded together with flexible bonding material and carrying abrasive grains. The combined void portion of the abrasive member and the solids portion of the foam particles occupies a substantial part of the total volume of the abrasive member, and more than 50% for members capable of conforming to contours. In one method of manufacture free preformed foam particles and abrasive grains are tumbled in the presence of tacky bonding material and the mix is thereafter compressed and cured.

3,773,481

A METHOD OF FORMING A SYMMETRICAL GRINDING WHEEL

Noble D. Whitaker, Los Alamitos; Thomas M. Akashi, Gardena, and John A. Aurentz, Palos Verdes Peninsula, all of Calif., assignors to Pacific Grinding Wheel Co., Inc., Marysville, Wash.

Filed Nov. 9, 1970, Ser. No. 87,710

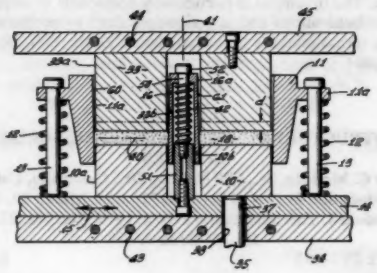
Int. Cl. B24d *3/30*

U.S. Cl. 51—295 **2 Claims**

An abrasive grinding wheel is formed by compression of a mix including abrasive and resin particles, and includes the steps:

a. filling the mix into an annular recess formed by a sleeve, a stripper platen received axially into the sleeve, and a central stem projecting axially within the sleeve; and

b. advancing a plunger relatively toward the platen to compress the mix in the recess and to an extent that the mix frictionally engages the sleeve inner wall, the sleeve being displaced axially and relatively toward the platen during the mix



compression and to an extent causing generally equalized compression packing of the mix at axially opposite side regions of the mix.

3,773,482

HIGH TEMPERATURE - HIGH STRENGTH ALLOY GLASS FIBER FEEDER

James H. Hansen, and Ralph W. Getz, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 884,689, Dec. 12, 1969, Pat. No. 3,622,289. This application Oct. 26, 1971, Ser. No. 192,293. The portion of the term of the patent subsequent to Nov. 23, 1988, has been disclaimed.

Int. Cl. C03b *37/02*

U.S. Cl. 65—1 **1 Claim**

A high temperature-high strength alloy comprising platinum, rhodium and one or more metals consisting of molybdenum, tungsten, iridium, and rhenium is fabricated into apparatus adapted to receive and controllably emit molten material for attenuation into glass fibers.

3,773,483

PROCESS FOR FIBRE DRAWING BY FLUID MEANS

Warren H. D. Schmidt, Sarnia, Ontario, Canada, assignor to Fiberglas Canada Limited, Toronto, Ontario, Canada

Continuation of Ser. No. 35,197, May 6, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,992

Int. Cl. C03b *37/02*

U.S. Cl. 65—2 **10 Claims**

A self-starting process and apparatus are described for drawing at least one continuous fiber or monofilament through a drawing funnel with a laminar flow of a fluid (a liquid, or gas or vapour) being utilized in the initial portion of the funnel to prevent damage of the monofilament. The draw-

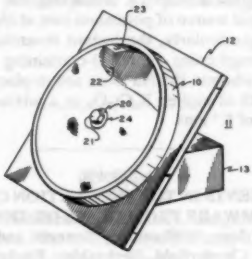
ing funnel is so positioned that its inlet is at a predetermined distance from the source of the monofilament. This distance is sufficient to ensure that the monofilament is fully solidified or "finished" before a pulling force is applied thereon, generated by the friction created by the moving stream of fluid in contact with the surface of the monofilament. The rate of drawing the continuous fiber is a function of two opposing forces, a positive force effected by the friction of the moving fluid on the fiber surface, the flow having been established by a pressure differential over the length of the funnel or drawing nozzle; and a negative force dependent upon the viscosity of the material at the source, and the diameter of the calibrated orifice from which the monofilament is initially drawn. Virgin fiber is produced which has not been physically or mechanically handled during formation thereof.

3,773,484

METHOD FOR MAKING HEAT EXCHANGE MATRIX BY CRYSTALLATION

Marion I. Gray, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 5, 1971, Ser. No. 169,216
Int. Cl. C03c *23/20*; C03b *29/00*; C03c *27/00*
U.S. Cl. 65—4 **19 Claims**



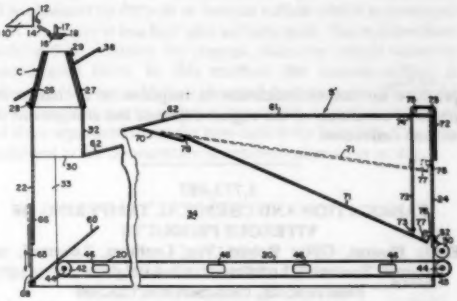
Disclosed is an improved assembly or matrix in which a plurality of open-ended, glass-ceramic tubes are disposed in axially parallel relation. The tubes are rigidified into a matrix structure along with additional glass-ceramic material interposed in the interstices between the tubes. The tubes are integrally bound to each other at their tube contact areas. The interposed glass-ceramic material integrally binds together the surfaces of the tubes facing the interstices between the tubes. The additional glass-ceramic material also provides a wear resistant, tube-reinforcing surface intermediate the open ends of the tubes defining the end faces of the assembly. The invention also comprehends the method of reinforcing a matrix of this type by interposing a finely divided, thermally crystallizable frit or other forms of low expansion crystallizable glass between individual, sealed, matrix-defining glass tubes and jointly thermally processing the tubes and the frit or other form of crystallizable glass to convert both the tubes and the interposed material to low-expansion, glass-ceramic materials of substantially the same thermal expansion characteristics. Following such thermal processing, the end of the tubes may be removed to provide a flow-through matrix structure, with the interposed material being exposed between the open ends of the tubes to provide a wear-resistant surface.

3,773,485

APPARATUS FOR PRODUCING FIBER MATS OF MINERAL FIBER

Joseph Corsentino, deceased, late of Belton, Tex., and Donald J. Corsentino, executor, Temple, Tex., assignors to The Susquehanna Corporation, Alexandria, Va.

Continuation of Ser. No. 880,160, Nov. 26, 1969, abandoned, which is a continuation-in-part of Ser. No. 496,987, Oct. 19, 1965, abandoned. This application Nov. 8, 1971, Ser. No. 196,504
Int. Cl. C03b *37/04*
U.S. Cl. 65—9 **12 Claims**



Apparatus for producing mineral wool fibers and the like including a longitudinal settling chamber having a foraminous conveyor, through which air is drawn, and a fiber producing device, preferably a head rotating about a vertical axis and annular steam ring surrounding but above the head, above the rear end of the chamber, with an open topped passage, conical or at first conical and then cylindrical, extending to the top of the rear end of the chamber. A binder me be sprayed downwardly and at an acute angle to fibers and air drawn with them, which are permitted to expand in moving into the rear of the chamber, while a constricted throat section in the chamber, followed by a section of greater cross sectional area, causes the air and fibers to turn and move forwardly for deposition on the conveyor, with shot and slugs dropping out as the air and fibers turn. A rear baffle extending upwardly and forwardly over the rear end of the conveyor serves to guide falling shot and slugs to a rear point of collection and removal. A major portion of the top of the chamber is inclined at an acute angle of not more than 20° to the conveyor. A false ceiling or longitudinal upper baffle may also be adjusted upwardly and downwardly to control the deposition of the fibers on the conveyor.

3,773,486

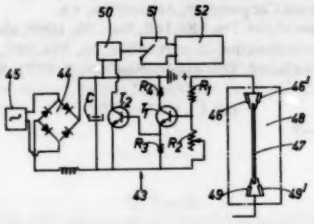
METHOD FOR MONITORING THE CONFIGURATION OF AN UPWARDLY DRAWN RIBBON OF GLASS

Robert Toussaint, and Elzo Mulder, both of Tiel, Netherlands, assignors to Glaverbel S.A., Brussels, Belgium

Division of Ser. No. 71,029, Sept. 10, 1970. This application Aug. 17, 1972, Ser. No. 281,485
Claims priority, application Great Britain, Sept. 10, 1969, 44,650/69; July 29, 1970, 36,764/70
Int. Cl. C03b *15/04*
U.S. Cl. 65—29 **9 Claims**

In the processing of sheet material by drawing a ribbon of the material upwardly, a method and apparatus for monitoring deflections experienced by the material out of the vertical plane along which it is normally drawn by providing sensing

components near, and normally out of contact with, opposite faces of the ribbon and by arranging the components to



produce an output indication in response to a change in a physical condition of the region adjacent the component due to such deflection.

3,773,487

FABRICATION AND CHEMICAL TEMPERING OF VITREOUS PRODUCTS

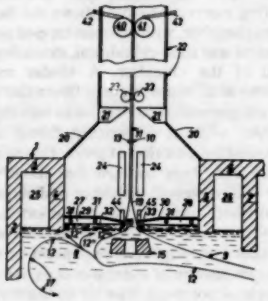
Emile Plumat, Gilly; Robert Van Laethem, Loverval, and Francois Toussaint, Lodelinsart, all of Belgium

Filed Apr. 23, 1968, Ser. No. 723,360

Claims priority, application Luxembourg, Apr. 25, 1967, 53,508; France, Mar. 29, 1968, 68146619

Int. Cl. C03c *21/00*; C03b *13/00*

U.S. Cl. 65—30 17 Claims



A process and apparatus for chemically tempering articles of glass or other vitreous or vitrocrystalline materials by replacing ions initially present in the surface layers of such article by smaller ions as the article is undergoing a primary forming operation while still in a molten or softened state.

3,773,488

IONIC PENETRATION OF VITREOUS OBJECTS

Thach Lan Tran, Cesson, and Alain Bonnetin, Clichy-sous-Bois, both of France, assignors to Saint-Gobain, Neuilly-sur-Siene, France

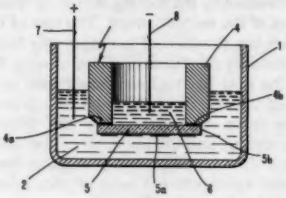
Filed Sept. 9, 1970, Ser. No. 70,784

Claims priority, application France, Sept. 10, 1964, 6930800

Int. Cl. C03c *21/00*

U.S. Cl. 65—30 7 Claims

Vitreous objects such as glass and ceramics are strengthened by replacing medium sized ions by smaller ions and thereafter replacing the smaller ions by ions larger than the medium sized ions. The first step is conveniently by thermal ion exchange and the second by electrolytic ion exchange. A new apparatus forms a perfect seal for the electrolytic impaction.



3,773,489

CHEMICALLY STRENGTHENED GLASS

Ray B. Forker, Jr., Beaver Dams; Theodore R. Kozlowski, Horseheads; Dennis A. Krygier, Corning, and Joseph N. Panzarino, Big Flats, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 877,055, Nov. 14, 1969, abandoned. This application Mar. 16, 1971, Ser. No. 124,931

Int. Cl. C03c *15/00, 27/00*

U.S. Cl. 65—30 4 Claims

This invention relates to the strengthening of soda aluminosilicate glass articles by contacting the surface thereof with an external source of potassium ions at elevated temperatures. More particularly, the instant invention is concerned with the strengthening of Na_2O-containing aluminosilicate glass articles wherein the Na^+ ions are re-placed with K^+ ions utilizing a bath of molten $K_2Cr_2O_7$ or a mixture KCl-$K_2Cr_2O_7$ as the source of K^+ ions.

3,773,490

IMPROVEMENTS IN THE PRODUCTION OF ONE-PIECE STEMWARE FROM GLASS OR THE LIKE

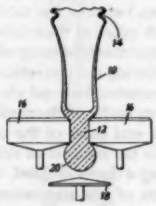
David Harold Inns; William Roy Bennett, and Arnold Chambers, all of Chesterfield, Derbyshire, England, assignors to Glass Tubes and Components Limited, Chesterfield, Derbyshire, England

Filed July 26, 1972, Ser. No. 275,447

Claims priority, application Great Britain, Aug. 2, 1971, 36,199/71

Int. Cl. C03g *23/04*

U.S. Cl. 65—280 8 Claims



Glass or like stemware is manufactured in one piece by part-forming an article having a glob of material in the position where the stem is required, placing the glob between rollers which have a shape defining the required shape of the stem, and rotating the glob between the rollers while advancing the rollers inwardly. Subsequently a foot forming member is axi-

ally advanced towards the glob to apply pressure against the glob to form a radially-extending foot.

3,773,491

HERBICIDAL DI HYDROBENZOFURANYLUREA

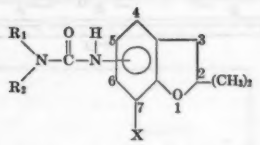
Philip Alexander Cruickshank, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 92,861

Int. Cl. A01n *9/28*

U.S. Cl. 71—88 **6 Claims**

A new class of chemical compounds, of the formula:



where the ureido group is in the 5- or 6-position; X is H, F, Cl, Br, I, $-CH_3$, or $-CF_3$; R_1 is H or $-CH_3$; R_2 is a lower alkyl of one to five carbon atoms; has selective pre- and post-emergence herbicidal activity. The synthesis of a preferred member of this class, 1,1-dimethyl-3-(2,3-dihydro-2,2-dimethylbenzofuran-5-yl)urea, is described in detail, and its utility is exemplified in both preemergence and post-emergence applications.

3,773,492

HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhineland Rhineland-Pfalz, Germany

Filed Apr. 22, 1970, Ser. No. 30,936

Claims priority, application Germany, Apr. 26, 1969, P 19 21 464.3

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **3 Claims**

Herbicidal mixtures containing an acid anilide in admixture with a pyridazone derivative or a substituted oxazolidine-3,5-dione derivative and a process for controlling the growth of unwanted plants with these mixtures.

3,773,493

METHOD OF PRODUCING DOPED TUNGSTEN POWDERS BY CHEMICAL DEPOSITION

Lee E. Brecher, and Roland Stickler, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 22, 1971, Ser. No. 210,952

Int. Cl. B22f *9/00*

U.S. Cl. 75—.5 BB **5 Claims**

Method of preparing doped tungsten powders for use in the fabrication of tungsten filament wire by simultaneous chemical vapor deposition of tungsten and dopant. There is also provided the product produced by this process which has a very homogeneous distribution of dopant within individual particles of powder.

3,773,494

SMELTING OF COPPER SULPHIDE CONCENTRATES WITH FERROUS SULPHATE

Sidney B. Tuwiner, Baldwin, N.Y., assignor to Treadwell Corporation, New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,881

Int. Cl. C22b *15/02, 15/00, 15/14*

U.S. Cl. 75—23 **8 Claims**

In smelting ores and concentrates of copper or nickel, matte fall is obtained by recycle of ferrous sulfate which is produced when the matte is leached with sulfuric acid. The residue from leaching then contains the copper, nickel or cobalt values in concentrated form. In this method the ferrous sulfate is reduced to ferrous sulfide at elevated temperatures. This is the basis of molten matte, wherein the metal values are collected and then separated from the iron sulfide by leaching. The iron contained in the concentrate is removed ultimately in slag.

3,773,495

PROCESS FOR THE AUTOMATIC CONTROL OF THE PIG IRON REFINING OPERATION

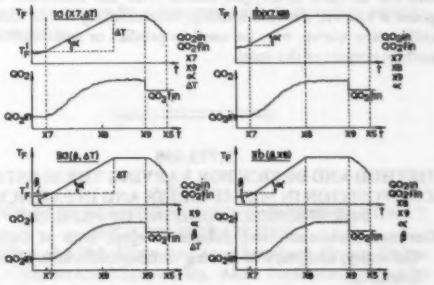
Paul-Emile Nilles, Embourg, and Yvon-Paul Noel, Pery-Trodz, both of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum Voor Research in de Metallurgie, Bruxelles, Belgium

Continuation-in-part of Ser. No. 835,521, June 23, 1969, abandoned. This application Dec. 30, 1971, Ser. No. 214,209

Claims priority, application Belgium, June 26, 1968, 717199

Int. Cl. C21c *5/32*

U.S. Cl. 75—60 **5 Claims**



In the pig iron refining operation in a converter working on the top blowing principle, the invention concerns an automatic control process in which the rate of blowing of oxygen into the converter and the temperature of the refining fumes are measured. The lance height is regulated relative to the bath of molten metal according to a predetermined program based on the amount of oxygen blown in. Simultaneously, the blowing rate is regulated in such a manner that the temperature of the fumes follows a predetermined path.

3,773,496

PROCESS FOR PRODUCING CHROME STEELS AND A CONVERTER FOR CARRYING OUT THE PROCESS

Helmut Knuppel; Karl Brotzmann, and Hans Georg Fassbinder, all of Sulzbach-Rosenberg Hutte, Germany, assignors to Eisenwerk-Gesellschaft Maximilianshutte mbH, Sulzbach-Rosenberg Hutte, Germany

Filed Feb. 18, 1971, Ser. No. 116,447

Claims priority, application Germany, Feb. 18, 1970, P 20 07 373.8

Int. Cl. C21c *7/08, 7/10*

U.S. Cl. 75—60 **13 Claims**

Process of producing chrome steels of a chromium content of about between 16 to 30 percent and low carbon and nitrogen contents. According to the process, a pig iron charge having a high chromium content and a carbon content of from 2 to 7 percent is refined by blowing with very pure oxygen under reduced pressure conditions, the oxygen being introduced into the melt below the level of the melt. The process is applicable to both ferritic and austenitic chrome steel production.

The application also discloses a novel bottom-blown converter construction for carrying out the refining procedure.

3,773,497

STEELMAKING

Hugh Willmot Greneell, and David James Bowen, both of Swansea, Great Britain, assignors to British Steel Corporation, London, England

Filed Mar. 2, 1972, Ser. No. 231,233

Int. Cl. C21c *5/30*

U.S. Cl. 75—60 **3 Claims**

In a method for controlling the final carbon content of a steel produced by an oxygen steelmaking process, the weight of the molten steel in the vessel is continuously monitored during the process by means of load cells. The load cells may be placed under the vessel support structure or alternatively within the vessel support structure with trunnions which support the vessel disposed to rest on the vessel. It is found that a minimum weight point occurs in the charge consistently at the same carbon content during steelmaking. The detection of this point is used in the establishment of a relationship between oxygen added after this point and the final carbon content of the steel. Providing that the initial charge weight is fairly constant and the amount of oxygen added after the minimum weight point is known, the relationship, conveniently in the form of a calibration curve, may be used to predict or control the final carbon conent of the steel.

3,773,498

METHOD AND DEVICE FOR VARYING THE SUBSTANCE COMPOSITION IN METAL MELTS AND IN PARTICULAR FOR THE DESULFURIZING OF PIG IRON

Gerhard Eichbaum, and Johann Gorjup, both of Duisburg, Germany, assignors to Demag Aktiengesellschaft, Duisburg, Germany

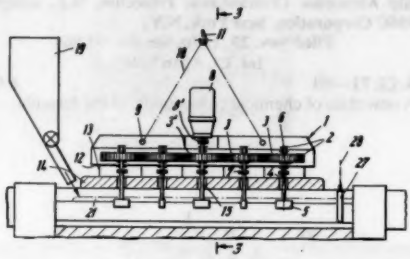
Filed June 14, 1971, Ser. No. 152,864

Claims priority, application Germany, June 15, 1970, P 20 29 449.9

Int. Cl. C21c *7/02*

U.S. Cl. 75—61 **5 Claims**

A method for varying the substance composition in metal melts and in particular for desulfurizing pig iron where the contact surfaces of the reacting surfaces of the melt is enlarged by stirring, comprises producing a flow of metal and simultaneously stirring the flow to produce a plurality of eddies simultaneously at several locations along the flow path. The apparatus includes a housing mounting a plurality of rotatable stirrers with agitator elements at the lower end which are adapted to dip into the melt and be located between the slag layer and the melt in the bath. The apparatus includes a heat insulated cover which is adapted to overlie the trough and which includes openings for the passage of the stirrers therethrough to position them at spaced locations along the length of the flow path in the trough. The metallurgical melt system includes means for tapping the furnace at a plurality of locations for flow along troughs along which the agitator elements are positioned.



3,773,499

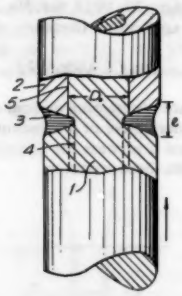
METHOD OF ZONAL MELTING OF MATERIALS

Mikhail Vasilievich Melnikov, ul. Akademika Koroleva, 5, kv. 221, and Aleko Konstantinovich Kakabadze, Kaliningrad Moskovskaya obl., ul. Komitetskaya, 3, kv. 6, both of Moscow, U.S.S.R.

Filed Apr. 3, 1968, Ser. No. 718,431

Int. Cl. C22b *9/02, 57/00;* **B01j** *17/10*

U.S. Cl. 75—65 ZM **5 Claims**



A method of zonal melting of materials without a crucible comprises the following steps: placing a layer of unrefined material upon the circumferential surface of a previously molten ingot of refined material; and zonal melting of the layer and ingot together in the course of which a floating zone is embedded to a predetermined depth of the initial ingot, thereby increasing the circumferential diameter of the ingot.

3,773,500

HIGH TENSILE STEEL FOR LARGE HEAT-INPUT AUTOMATIC WELDING AND PRODUCTION PROCESS THEREFOR

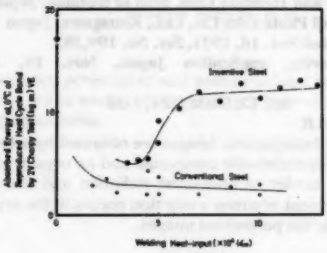
Shogo Kanazawa, Kamakura; Shoji Saito, Tokyo; Akira Nakashima, Tokyo; Kazunari Yamato, Tokyo; Kentaro Okamoto; Ken Kanaya, both of Sagamihara, and Kouzi Tanabe, Kohza, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Mar. 24, 1971, Ser. No. 127,710

Claims priority, application Japan, Mar. 26, 1970, 45/25042; Oct. 15, 1970, 45/90636

Int. Cl. C22c *39/02*, *39/54*; C21d *7/14*

U.S. Cl. 75—123 B 11 Claims



A high tensile strength steel for a large heat-input welding more than 50,000J/cm which contains more than 0.004% by weight in respect to steel weight of titanium in TiN phase smaller than 0.05μ in the steel before welding and comprises 0.03–0.23% of carbon, 0.02 to 0.8% of sulphur, 0.5 to 2.0% of manganese, 0.004 to 0.07% of titanium 0.0005 to 0.10% of soluble aluminium, and 0.003 to 0.012% of total nitrogen, with addition of at least one selected from the group consisting of B, V, Ni, Cu, Cr and Mo.

3,773,501

ALUMINUM ALLOYS FOR ELECTRICAL CONDUCTOR

Katsuhisa Nakajima, and Sadao Inoue, both of Nikko, Japan, assignors to The Furukawa Electric Company Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 828,737, May 28, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,444

Claims priority, application Japan, June 6, 1968, 43/38827; Aug. 2, 1968, 43/54798

Int. Cl. C22c *21/00*

U.S. Cl. 75—142 5 Claims

The present invention provides an aluminum alloy conductor wire consisting essentially of about 0.01 – 0.6% by weight antimony, about 0.05 – 0.6% by weight magnesium, less than 0.4% be weight copper and less than 0.7% by weight of a member selected from the group consisting of iron, nickel and manganese, the balance being aluminum and unavoidable impurities thereof, a part of the antimony and magnesium forming an intermetallic compound, said compound being uniformly dispersed in an aluminum matrix, the alloy wire having, when cold drawn and not annealed, a minimum conductivity of 54% IACS and when annealed and then cold drawn, a minimum conductivity of 58% IACS.

3,773,502

ALUMINUM-ZINC-ALLOY

Gilbert Horvath, Linz, Austria, and Hans-Peter Mayer, Altena/Westfalen, Germany, assignors to Vereinigte Osterrichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Dec. 1, 1970, Ser. No. 94,175

Claims priority, application Austria, Dec. 3, 1969, 11272

Int. Cl. C22c *21/00*

U.S. Cl. 75—146 4 Claims

The invention relates to an aluminum-zinc-alloy consisting of 50 to 75 % aluminum, 0.3 to 1.5 % manganese and, if desired, copper, nickel, silicium, lithium and chromium, remainder zinc. As compared to known alloys used for the production of bearings these new alloys are provided with an increased red hardness, high load sustaining capacity at sliding movement, lasting accuracy to gauge, high mechanical strength, adequate resistance to corrosion, essentially increased resistance to creeping, increased applicability as casting and kneading material, and may be hot shaped at high working speeds with temperatures of the range 275° to 450° C.

3,773,503

COPPER BASE ALLOY

Paul J. Kranz, Westfield; Victor Little, Jr., Edison, and Michael Myers, New Brunswick, all of N.J., assignors to American Smelting and Refining Company, New York, N.Y.

Filed Nov. 4, 1971, Ser. No. 195,776

Int. Cl. C22c *9/00*

U.S. Cl. 75—153 2 Claims

Copper base alloys containing essentially, by weight, 0.002 to 0.015 percent phosphorous, 0.02 to 0.04 percent tellurium, balance substantially all copper. Continuously cast castings of the alloy are preferred. The alloys, after cold working, exhibit retention of high strength characteristics including high tensile strengths after exposure to high annealing temperatures for substantial periods. The alloys also have high electrical and thermal conductivity before and after exposure to high annealing temperatures for substantial periods as well as satisfactory elongation.

3,773,504

COPPER BASE ALLOY HAVING WEAR RESISTANCE AT HIGH TEMPERATURES

Itaru Niimi, 4-1205, Obasama, Aza, Takabari, Ooaza, Idaka-cho, Chigusa-ku, Nagoya City, Aichi Prefecture; Yasuhisa Kaneko, 10, Toyota-cho, Toyota City; Yoshiro Komiyama; Yoshiki Uchiyama, both of 48, 4-chome, Heiwa-cho, Toyota City; Yasuo Takeda, 8, Toyota-cho, Toyota City, and Shirou Maeda, 12, 6-chome, Miyukihon-machi, Toyota City, all of Japan

Filed Aug. 31, 1971, Ser. No. 176,577

Claims priority, application Japan, Dec. 28, 1970, 45/120195

Int. Cl. C22c *9/10*, *9/04*

U.S. Cl. 75—157.5 4 Claims

The present invention relates to copper base alloys having excellent seizure resistance and wear resistance at high temperatures containing copper as the principal constituent, and zinc (Zn), aluminum (Al), manganese (Mn), silicon (Si), chromium (Cr), and phosphorus (P) as alloy elements.

3,773,505

COPPER BASE ALLOY CONTAINING TITANIUM AND ANTIMONY

Donald J. Nesslage, Old Bridge, and Lin S. Yu, Franklin Park, both of N.J., assignors to Phelps Dodge Industries, Inc., New York, N.Y.

Filed Sept. 25, 1972, Ser. No. 292,186
Int. Cl. C22c 9/00
U.S. Cl. 75—164 5 Claims

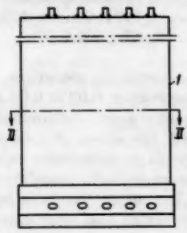
Disclosed are alloy compositions consisting essentially of copper and small amounts of titanium and antimony within stated ranges. These compositions have high electrical conductivity, high strength and high ductility as compared with copper alloys containing either titanium or antimony. The disclosed ranges of alloy compositions provide a class of copper-base alloys having a unique flexibility with regard to electrical, mechanical and physical properties. By varying the relative and total amounts of titanium and antimony, copper-base alloys having predictable and differing properties may be obtained. Method for the heat treatment and fabrication of the alloys are also disclosed.

3,773,506

METHOD OF MANUFACTURING A BLADE HAVING A PLURALITY OF INTERNAL COOLING CHANNELS

Hans Larker, and Sven-Erik Isaksson, both of Robertsfors, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Mar. 23, 1972, Ser. No. 237,368
Claims priority, application Sweden, Mar. 26, 1971, 3960/71
Int. Cl. B22f 7/00; B21k 3/04
U.S. Cl. 75—208 R 8 Claims



In manufacturing blades for gas turbines with a plurality of inner cooling channels by isostatic compression, a sintering capsule of deformable material is provided with thin-walled tubes arranged substantially parallel to the capsule wall parts corresponding to the high and low pressure surfaces of the blade. A powdered material is poured into the capsule, which is then evacuated, sealed and heated to at least 800°C. Thereafter the heated capsule is subjected to an external gas pressure of at least 500 bars. Simultaneously with the compression, the tubes are subjected to such a high internal gas pressure that the linear decrease in the tube cross-section is at most 50 percent.

3,773,507

ELECTROPHOTOGRAPHIC REVERSAL DEVELOPMENT PROCESS EMPLOYING A PRE-TONER

Masamichi Sato; Osamu Fukushima, and Satoru Honjo, all of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed July 2, 1971, Ser. No. 159,455
Claims priority, application Japan, July 13, 1970, 45/60875
Int. Cl. G03g 13/00, 13/02
U.S. Cl. 96—1 R 2 Claims

A reversal development process which comprises, after uniformly charging a photoconductive insulating coating with a charge of one polarity, applying a finely divided pre-toner having a white or off-white appearance and a charge of the same polarity as that of the uniform charge whereby the pre-toner deposits at the charge-deficient areas in the coating, then subjecting the thus treated coating to image exposure to form an electro-static latent image, and finally developing the latent image by applying a finely divided toner differently colored from the pre-toner, the toner having a charge of the same polarity as that of the latent image.

3,773,508

IMAGEWISE EXPOSING AND HEATING A PHOTOSENSITIVE COMPOSITION CONTAINING A SPIROPYRAN COMPOUND AND AN ORGANIC PEROXIDE

Chiaki Osada, and Hisatake Ono, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 16, 1971, Ser. No. 199,382
Claims priority, application Japan, Nov. 19, 1970, 45/102198
Int. Cl. G03c 5/24, 1/52
U.S. Cl. 96—48 R 15 Claims

Permanent photochromic images are obtained by selectively exposing a photochromic compound and an organic peroxide in a resin binder to ultraviolet radiation and thereafter heating the element whereby a reaction occurs in the exposed areas to provide the permenent images.

3,773,509

MORDANTING PROCESS FOR COLOR PRINTING MATERIALS

Yasushi Ohyama, Takatsuki, and Sadayuki Miyazawa, Kyoto, both of Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 9, 1971, Ser. No. 122,520
Claims priority, application Japan, Mar. 10, 1970, 45/19759
Int. Cl. G03c 7/00
U.S. Cl. 96—57 7 Claims

A mordanting process for color printing materials which comprises using a dispersion of fine coacervate particles prepared by reacting a polymer having a cationic nitrogen-containing group which acts as a mordant for a dye having an anionic group and diffusible in an aqueous medium and a phthalic acid derivative of gelatin, polyvinyl alcohol or starch in an aqueous binder. Examples of said polymer having the nitrogen-containing group are poly-2-vinyl pyridine, methyl p-toluenesulfonate of poly-4-vinyl pyridine, poly-4-vinylbenzyl-trimethyl ammonium chloride, poly-4-vinylbenzyl-triethanol ammonium chloride, benzyl chloride of polymethacrylic acid dimethylamino ethanol ester, acetate of partially amino guanidized polyvinyl methyl ketone, and aminoguanidized dialdehyde starch.

3,773,510

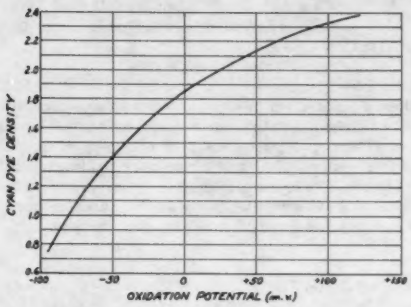
ADDITIVES TO BLEACH/FIX BATHS

Richard S. Fisch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed June 26, 1971, Ser. No. 153,713
Int. Cl. G03c 5/32, 5/38
U.S. Cl. 96—60 BF 10 Claims

In a bleach/fix bath for color photographic processing, said bath having a complexed or sequestered metal oxidizing agent as the bleaching agent, the improvement which comprises a water soluble ionic compound in which one of the ionic spe-

cies is inorganic and contains at least one multivalent element at one of its higher valence states, which compound increases



the oxidation potential of said bath by at least 30 millivolts in a quantity not in excess of 50 grams per liter without rendering said bath unstable.

3,773,511

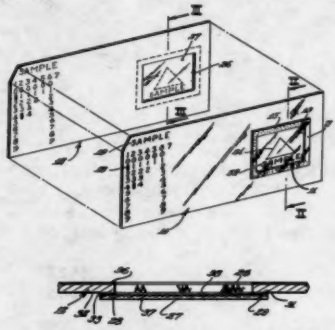
FILM RECORD CARD SYSTEM

Thomas P. Anderson, Hubbard Woods, Ill., assignor to Microseal Corporation, Skokie, Ill.

Division of Ser. No. 866,306, Oct. 14, 1969, Pat. No. 3,604,799. This application June 1, 1971, Ser. No. 148,421

Int. Cl. G03c *1/52, 1/78*

U.S. Cl. 96—75 **4 Claims**



An information storage system comprises a diazo reproducible film record card and a receptor or copying card treated with diazo-type compounds and carrying a strip of blank film also treated with diazo-type compounds. The reproducible film record card may be of the type adapted to be processed at high speeds by automatic tabulating or sorting machines and may comprise a sheet form card composed of transparentized paper stock having at least one cutout or aperture formed therein for receiving a strip of film containing a micro-image and means for retaining the film within the cutout. The transparentized paper stock has an actinic transmission percentage enabling simultaneous diazo reproduction of both data printed on the card and the micro-image contained on the film. The receptor or copying card may include a card capable of being machine processed in automatic sorting machines and has an aperture or cutout locatd coincidentally with the cutout of the reproducible card and mounts a film having a side or face surface thereof coated with diazo-type compounds and exposed.

3,773,512

PHOTOTHERMIC MATERIAL CONTAINING A LIGHT-INSENSITIVE SILVER SALT AND AN INDANE-1,3-DIONE REDUCING AGENT

Albert Lucien Poot, Kontich; Jan Frans Van Besauw, Brasschaat; Frans Clement Heugebaert, Kontich, and Eric Maria Brinckman, Mortsel, all of Belgium, assignors to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Nov. 17, 1971, Ser. No. 199,746

Claims priority, application Great Britain, Nov. 19, 1970, 55,092/70

Int. Cl. G03c *5/24, 1/04, 1/76*

U.S. Cl. 96—48 HD **10 Claims**

Photographic recording material with a light-sensitive layer comprising a substantially light-insensitive silver salt, an indane-1,3-dione compound acting as reducing agent and a light-sensitive heavy metal compound which upon exposure to activating electromagnetic radiation forms metal nuclei that upon heating of the material initiate a redox reaction between the light-insensitive silver salt and the reducing agent.

A preferred recording material for print-out reproduction contains silver behenate, 2-phenylindane-1,3-dione and traces of silver halide.

3,773,513

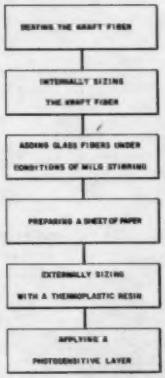
DIMENSIONALLY STABLE PHOTOGRAPHIC PAPER CONTAINING GLASS FIBERS

Robert H. MacClaren, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Sept. 12, 1969, Ser. No. 857,430

Int. Cl. G03c *1/86*

U.S. Cl. 96—85 **4 Claims**



A dimensionally stable photographic paper is prepared by applying a photosensitive coating to a bleached softwood kraft fiber paper substrate containing from about 30 to 90 percent glass fibers. The paper base is prepared by adding from about 30 to 90 percent glass fiber to a bleached softwood kraft fiber pulp suspension just prior to passing the pulp through a paper making machine. The photographic paper of the instant invention has particular utility under conditions of high humidity.

3,773,514

LIGHT-SENSITIVE STRUCTURE

Howard A. Fromson, Rouges Ridge Rd., Weston, Conn.

Filed Aug. 12, 1971, Ser. No. 171,052

Int. Cl. G03c *1/94*

U.S. Cl. 96—86 **20 Claims**

A light-sensitive composite especially useful in the printing and electronic circuit arts includes a substrate, a soluble light-

sensitive coating thereon which becomes insoluble upon exposure to actinic radiation, or vice versa, and an ultra-thin tough, wear-resistant protective coating over the light-sensitive coating which will transmit actinic radiation for altering the solubility of areas of the light-sensitive coating and which is permeable to solvents for dissolving and removing areas of the light-sensitive coating which remain soluble after exposure to actinic radiation. The preferred protective coating is a vacuum deposited metal coating which is useful per se or provides a basis for further metal coatings such as electroless and electrolytic deposited metal coatings.

3,773,515

LIGHT-SENSITIVE MATERIAL CONTAINING A POLYHALOGENATED HYDROCARBON, AN N-VINYLCARBAZOLE, AND A FURFURYLIDENE COMPOUND AS AN IMAGE ENHANCER AND STABILIZER

Hiroshi Yamashita, and Nobuyoshi Sekikawa, both of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1971, Ser. No. 213,538

Claims priority, application Japan, Dec. 29, 1970, 45/121448

Int. Cl. G03c *1/52, 1/68*

U.S. Cl. 96—90 R **14 Claims**

A non-silver halide light-sensitive material for dry processing containing (a) polyhalogenated hydrocarbon, (b) N-vinylcarbazole, (c) a furfurylidene compound and optionally at least one of the following; hydroquinone, resorcinol, derivatives thereof, a dye or dye bases.

3,773,516

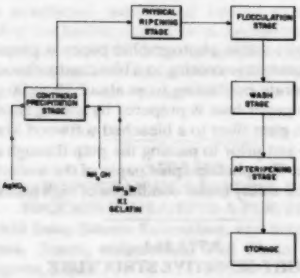
PROCESS FOR PREPARING SILVER HALIDE EMULSIONS

Edgar B. Gutoff, Brookline, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of Ser. No. 7,817, Feb. 2, 1970, abandoned. This application Dec. 29, 1971, Ser. No. 213,543

Int. Cl. G03c *1/02*

U.S. Cl. 96—94 R **4 Claims**



Poly-disperse photographic silver halide emulsions comprising silver halide grains of uniform habit are produced by utilizing a continuous precipitation technique.

3,773,517

PRODUCTION OF PHOTOGRAPHIC SILVER HALIDE EMULSIONS

Geoffrey Michael Dodwell, Essex, England, assignor to Ilford Limited, Ilford, England

Filed Apr. 4, 1972, Ser. No. 241,064

Claims priority, application Great Britain, Apr. 16, 1971, 9,686/71; Oct. 13, 1971, 47,683/71

Int. Cl. G03c *1/04*

U.S. Cl. 96—114 **12 Claims**

Photographic silver halide emulsions an produced by means of silver halide, gelatin and a polymer latex. The latter is prepared by copolymerization of a monomer yielding a water insoluble homopolymer and a monomer yielding a watersoluble polymer. Copolymerization takes place in the presence of a salt of an alkyl aryl polyether phosphate and the free acid of such salt or a non-ionic alkyl polyether compound.

3,773,518

RAW GRAIN AND FEED COMPOSITIONS CONTAINING 1,3-ALIPHATIC DIOLS AND/OR THEIR ESTERS

John W. Frankenfeld, 2 Ballinswood Rd., Atlantic Highlands, N.J.; Raam R. Mohan, 112 Oakland St., Berkeley Heights, and Robert L. Squibb, 1172 Kearney Dr., North Brunswick, both of N.J.

Filed Jan. 27, 1971, Ser. No. 110,247

Int. Cl. A23k *3/02*; **A23b** *9/00*

U.S. Cl. 426—151 **11 Claims**

Raw grain and feed compositions of great resistance to the attack of molds, bacteria and yeast are prepared by utilizing with said substances an aliphatic 1,3-diol and/or their esters.

3,773,519

PROCESS FOR TREATING A POWDERED FAT-CONTAINING MILK PRODUCT

Jan Pisecky, and Vagn Westergaard, both of Tastrup, Denmark, assignors to Aktieselskabet Niro Atomizer, Soborg, Denmark

Filed Sept. 22, 1971, Ser. No. 182,799

Claims priority, application Denmark, Sept. 25, 1970, 4920

Int. Cl. A23c *11/00, 9/00*

U.S. Cl. 426—99 **4 Claims**

The reconstitution properties in cold water are improved of a powdered fat-containing milk product, especially whole milk powder, by applying a coating of lecithin, possibly dissolved in a fat. The quantity of lecithin and the quantity as well as the melting characteristic of the possible fat which is applied, are proportioned in dependence of the quantity and the melting characteristic of free surface fat present on the milk product prior to the treatment, as well as in dependence of the specific surface of the milk product. Hereby the quantity of lecithin and possible added fat plus the free surface fat present prior to the treatment is kept within specified limits, and the ratio between lecithin and that part of the free surface fat present before the treatment which is liquid at ambient temperature plus that part of the possibly applied fat which is liquid at ambient temperature is also kept within specified limits, and further a specified minimum thickness is obtained of the liquid fraction present on the surface of the product after the treatment. The treated product has excellent reconstitution properties in cold water.

3,773,520

CONTINUOUS PRE-COOKING PROCESS FOR THE PRODUCTION OF COOKED DOUGH FOODSTUFFS

John G. Longenecker, Ozone Park, N.Y.; Manuel J. Rubio, Bridgeport, and Ciro M. Robustelli, Stamford, both of Conn., assignors to Ael Food Automation, Inc., Norwalk, Conn.

Filed Aug. 12, 1971, Ser. No. 171,068
Int. Cl. A23l *1/10, 1/12*
U.S. Cl. 426—502 17 Claims

A continuous process for producing a cooked dough-type product by utilizing pre-cooking of the dough while being mixed prior to shaping thereby enabling a reduction of oven dwell time to a minimum while obtaining the commercially desired characteristics in the final product. Proper pre-cooking dough temperature is achieved by mixing heated liquid with the ingredients or heating the mixing vessel or both.

3,773,521

SHORTENING SPARING PROCESS FOR WHEAT FLOUR BASED BAKED OR FRIED DOUGH PRODUCTS AND DOUGHS PRODUCED THEREBY

Cho C. Tsen, and William J. Hoover, both of Manhattan, Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Oct. 5, 1970, Ser. No. 78,237
Int. Cl. A21d *2/16, 2/26, 13/06*
U.S. Cl. 426—343 2 Claims

A method of decreasing or completely eliminating the shortening normally required in yeast or chemically leavened wheat flour based bread, baked or fried dough or batter products by incorporating in the dough or batter in lieu of the shortening omitted, from 0.1 to 3 percent flour weight of an additive selected from the group consisting of sodium or calcium salts of acyl lactylates of C_{14}–C_{22} fatty acids. The preferred additives are sodium stearoyl-2-lactylate or calcium stearoyl-2-lactylate each added at a concentration of 0.5 percent.

3,773,522

COMBINATION PIE CRUST AND PAN

James Franklin Lowe, Lock Box 2552, Prescott, Ariz.

Filed Sept. 22, 1971, Ser. No. 182,682
Int. Cl. A21d *13/08*; B65b *25/16*
U.S. Cl. 426—132 4 Claims

This pie crust blank is of one piece and has a substantially circular bottom crust-forming portion surrounded by radially outwardly extending triangular top crust-forming portions integrally formed therewith. The junctures between the pairs of adjacent sides of the triangular portions and bottom crust portion have relief cutout means which coincide substantially with the edge of the side wall and rim of the pan in which the pie is to be baked. The triangular pieces are of a height from base to apex to permit the triangles to be folded over the filling material and meet at the center of the pie.

3,773,523

EDIBLE COMPOSITIONS AND PROCESSES FOR MAKING SAME

Lim Chheang Chhuy, Paris, France, and Edgar Allen Day, Rumson, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Apr. 26, 1971, Ser. No. 137,698
Int. Cl. A23l *1/26, 1/325*
U.S. Cl. 426—167 16 Claims

Processes for imparting a seafood flavor to foodstuffs comprising adding thereto a small amount of (1) a processed product of (I) an algae extract or enzymatic digest of seafood or seafood extract or seashell extract, (II) a sulfur compound such as cysteine and, if desired (III) thiamine and/or thiazole alkanols and (IV) other free amino acids and/or polypeptides and, in addition, if desired (2) an oxazoline and/or 2,4-pentadienal and/or thiazole alkanols; as well as flavoring compositions and flavor enhancing compositions containing such processed products and optional materials and the foodstuffs so obtained.

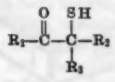
3,773,524

FLAVORING COMPOSITIONS AND PROCESSES UTILIZING ALPHA-KETOTHIOLS

Ira Katz, Elberon; William J. Evers, Atlantic Highlands, and Anne Sanderson, Highlands, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed July 12, 1971, Ser. No. 162,008
Int. Cl. A23l *1/26*
U.S. Cl. 426—65 8 Claims

The use of certain α-Ketothiols of the formula



wherein R_1 is methyl or ethyl and R_2 and R_3 are hydrogen, methyl or ethyl to alter the meat flavor and aroma of foodstuffs.

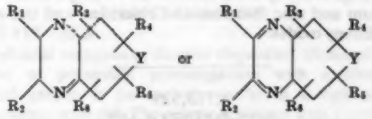
3,773,525

FLAVORING WITH BICYCLIC DEHYDROPIPERAZINES

Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Matawan, and Ernst T. Theimer, Rumson, all of N.J.

Division of Ser. No. 68,531, Aug. 31, 1970, Pat. No. 3,705,158.
This application Apr. 4, 1972, Ser. No. 241,053
Int. Cl. A23l *1/26*; C07d *51/74*
U.S. Cl. 426—222 7 Claims

Processes for altering the flavors and/or aromas of products, including foodstuffs and tobaccos, which comprise adding thereto a small but effective amount of at least one dehydropiperazine having the formula



where Y is $(-CH_2-)_n$; *n* is an integer from one to six; one dashed line represents a double bond and the other represents a single bond; and R_1, R_2, R_3, R_4, R_5, and R_6 are the same or different and represent hydrogen or alkyl; the products so produced; flavoring and fragrance compositions containing such dehydropiperazines; and novel dehydropiperzines and processes for their production.

3,773,526

SACCHARIN SWEETNER COMPOSITION

John B. Bliznak, Lombard, Ill., assignor to Alberto-Culver Company, Melrose Park, Ill.

Filed July 6, 1971, Ser. No. 160,167
Int. Cl. A23l *1/26*
U.S. Cl. 426—215 7 Claims

Saccharin sweetener compositions in the form of a water-soluble saccharin salt in admixture with a controlled quantity of calcium chloride whereby effectively to reduce the bitter after-taste of said saccharin salt, particularly in admixture with a major proportion of a starch hydrolysate.

3,773,527

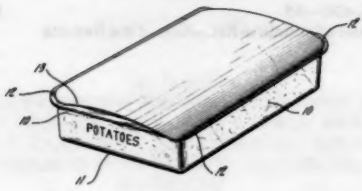
METHOD OF PRESERVING COOKED POTATOES

Artemio P. Ruggerone, Covina, Calif., assignor to Lloyd M. Shapoff, Hawthorne, Calif.

Continuation of Ser. No. 703,1841, Jan. 14, 1968, abandoned, Continuation-in-part of Ser. No. 657,903, Aug. 2, 1967, abandoned. This application July 30, 1970, Ser. No. 64,119

Int. Cl. A23b *7/14*; B65b *31/00*

U.S. Cl. 426—106 7 Claims



Peeled, cooked, and cut fresh potatoes are preserved in a sealed refrigerated container filled with a mixture of carbon dioxide and nitrogen.

3,773,528

IMPROVED UV TRANSMITTING LANTHANIUM-ZINC-BORATE GLASS COMPOSITION

Mir Akbar Ali, Evanston; William R. Bratschun, La Grange, both of Ill., and Alexis G. Pincus, New York, N.Y., assignors to IIT Research Institute, Chicago, Ill.

Filed Jan. 28, 1971, Ser. No. 110,671

Int. Cl. C03c *3/14*, *3/24*, *13/00*

U.S. Cl. 106—47 R 5 Claims

An improved ternary lanthanum-zinc-borate glass composition having improved ultraviolet light transmission in near ultraviolet spectral range, and a process for preparing such a glass composition wherein the near ultraviolet light transmission is improved by small amounts of compounds such as lanthanum and zinc fluorides and chlorides, and tin, arsenic and antimony oxides.

3,773,529

NON-OXIDE GLASS

Emile Plumat, Gilly, Belgium, assignor to Glaverbel, S.A., Watermael Boitsfort, Belgium

Continuation of Ser. No. 696,162, Jan. 8, 1968, abandoned. This application July 1, 1971, Ser. No. 159,004

Claims priority, application Luxembourg, Jan. 6, 1967, 52,765

Int. Cl. C03c *3/12*

U.S. Cl. 106—47 R 2 Claims

Non-oxide glass composition of BeTe 60%, TiS_2 10 percent, Li_2S 10 percent, K_2S 10 percent and Cs_2S 10 percent by weight.

3,773,530

GLASSES CONTAINING CADMIUM SULFIDE AS A COLORANT

David W. Morgan, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Nov. 8, 1971, Ser. No. 196,659

Int. Cl. C03c *3/08*, *3/20*, *3/04*

U.S. Cl. 106—54 3 Claims

Glasses which contain cadmium sulfide (CdS) as a colorant, and which are compatible with platinum while the glass is in the molten state, are melted under non-reducing conditions at a temperature not in excess of 1300°C. Suitable base glasses have a viscosity not over 200 poises at 1300°C. and contain, in percent by weight on an oxide basis, 40–60% SiO_2, 5–20% B_2O_3, 1.5–6.0% Al_2O_3, 4–8% Na_2O, 6–14% K_2O, 4–12% ZnO, 0–6% BaO, 0–8% P_2O_5. In addition, the glass contains cadmium, calculated as the oxide (CdO), sulfur and, if desired, selenium, as colorants.

3,773,531

DENSE CHROME REFRACTORY MATERIAL

Edward L. Manigault, Cincinnati, Ohio, assignor to The Chas. Taylor's Sons Company, Cincinnati, Ohio

Filed July 13, 1972, Ser. No. 271,604

Int. Cl. C04b *35/12*, *35/16*

U.S. Cl. 106—57 7 Claims

A dense chrome refractory material having superior corrosion resistance to molten glass has been prepared, said refractory comprising from 85 percent to 98 percent chromic oxide, from 1 percent to 10 percent zircon and from 0.5 percent to 5 percent of a titanium compound selected from the group consisting of barium titanate and titanium dioxide.

3,773,532

MULLITE-CHROME REFRACTORY

Edward L. Manigault, Cincinnati, Ohio, assignor to The Chas. Taylor's Sons Company, Cincinnati, Ohio

Filed July 13, 1972, Ser. No. 271,601

Int. Cl. Co4b *35/42*

U.S. Cl. 106—59 4 Claims

A new type of mullite brick refractory composition has been produced which contains from 56 to 80 percent mullite, from 6 to 13 percent calcined kyanite, from 5 to 8 percent alumina, from 1 to 9 percent silica and from 4 to 25 percent iron-chromite ore. This new refractory material has increased service life and decreased slag and alkali attack when used in the steel industry.

3,773,533

PROCESS FOR THE MANUFACTURE OF GYPSUM BOARD

Tsunehiko Omoto; Tadashi Inoue, and Hironori Aizawa, all of Shimonoseki, Japan, assignors to Mitsui Toatsu Chemicals, Incorporated, Tokyo, Japan

Filed Oct. 4, 1971, Ser. No. 186,487

Claims priority, application Japan, Oct. 15, 1970, 45/90065

Int. Cl. C04b *11/00*

U.S. Cl. 106—110 5 Claims

A process for the manufacture of a gypsum board wherein α-type hemihydrate gypsum by-produced in the wet process of phosphoric acid manufacturing is ground and mixed with water and a metal ion of iron or aluminum to form an aqueous slurry containing said gypsum and said slurry is enclosed between two sheets of board paper while maintaining the pH value of said slurry at 4 to 7, thereby said slurry sets to form said gypsum board.

3,773,534

PROCESS FOR PREPARING A DRY SEMI-PERMEABLE CELLULOSE ACETATE MEMBRANE

Wolfgang Kaiser, Neu-Isenburg, and Franz Schwarzer, Wiesbaden, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Nov. 30, 1971, Ser. No. 203,437

Claims priority, application Germany, Dec. 1, 1970, P 20 59 048.1

Int. Cl. C08b *27/44*

U.S. Cl. 106—178 5 Claims

A dry semi-permeable cellulose acetate membrane is processed from a wet cellulose acetate membrane having an active separating layer and a porous supporting layer. In the process, the wet membrane is immersed in an aqueous solution containing

Two to 20 per cent by weight of an organic carboxylic acid having one to three carbon atoms, and

20 to 40 per cent by weight of a polyhydric alcohol having two or three carbon atoms, and

dried at a temperature in the range of about 25° to 100° C.

3,773,535

ABRASION RESISTANT STABILIZED LEAD CHROMATE PIGMENTS COATED WITH SILICA AND POLYOLEFIN WAX

Aladar Burgyan, Cleveland; Richard A. Pipoly, Garfield Heights, and Paul H. Stelzer, Warrensville, all of Ohio, assignors to Ferro Corporation, Cleveland, Ohio

Filed Feb. 25, 1972, Ser. No. 229,512

Int. Cl. C09c *1/20*

U.S. Cl. 106—298 **11 Claims**

Lead chromate pigments are improved by coating the pigment particles with a layer of silica and then encapsulating the silica coated particles in polyolefin wax. Such pigments when used in thermoplastic molding compositions exhibit good abrasion resistance and color stability even at elevated temperatures required for compounding and molding of the thermoplastics.

3,773,536

PRODUCTION OF PIGMENTS

Samuel Veale Batten, Billingham; Sydney John Gill, Yarm, and David Graeme Milne, Middlesbrough, all of England, assignors to British Titan Limited, Billingham, Teesside, England

Filed Apr. 13, 1972, Ser. No. 243,872

Claims priority, application Great Britain, May 4, 1971, 13,076/71

Int. Cl. B09c *3/00*

U.S. Cl. 106—309 **16 Claims**

A process for the production of pigment in the form of pellets by mixing the pigment under conditions of low shear and in the substantial absence of water with a hydrophobic organic liquid and then separating and collecting the so-formed pellets.

3,773,537

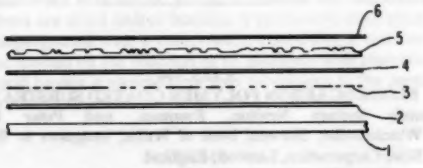
METHOD OF MAKING A PICTURE WITH SURFACE IRREGULARITIES FROM A FLAT PRINT

Donald H. Colwell, 7700 Meadow Rd., Dallas, Tex.

Filed Oct. 1, 1971, Ser. No. 185,592

Int. Cl. B44d *1/32*

U.S. Cl. 117—11 **3 Claims**



A method of making a picture in which a print, preferably a photographic print produced from a transparency made from infrared color film is given a texture, if desired, by being rolled under pressure, then coated with a clear lacquer, then touched up, if desired, by application of acrylic colors, then coated again with lacquer if said colors are used, then coated by a transparent gel medium which is given a desired texture and then finally coated with a lacquer.

3,773,538

TRANSFER PROOF INK FOR PRESSURE SENSITIVE ADHESIVE TAPES

Ivan Cutakoui Milutin, Burscheill, Germany; Charles Bartell, Highland Park, and Alfred Blum, Skokie, both of Ill., assignors to Borden, Inc., New York, N.Y.

Division of Ser. No. 30,961, April 22, 1970, Pat. No. 3,681,105. This application Jan. 24, 1972, Ser. No. 220,486

Int. Cl. C09j *7/04*

U.S. Cl. 117—15 **6 Claims**

A transfer-proof ink particularly suitable for printing on the backing of pressure-sensitive adhesive webs such as tapes, said ink containing a compatible transferproofing agent consisting of surface active compounds containing a polar part comprising a polyfluorinated alkyl group containing from 3 to 21 carbon atoms and having at least three-fourths of its hydrogen atoms replaced by fluorine atoms soluble in the ink solvent but substantially insoluble in both backing and adhesive layers of web. The invention includes pressure-sensitive webs which have printed matter on the non-adhesive side of said webs and which can be wound and unwound in the usual manner without transfer of either ink or adhesive to the adjacent side, the printed matter of said webs being formed from the transfer-proofing ink of this invention.

3,773,539

METHOD OF PREPARING LIGHT-SENSITIVE PHOTOGRAPHIC MATERIAL WITH MANGANESE DIOXIDE LAYER

Shui Sato; Tomio Nakajima; Masayuki Shono, and Shinobu Korematsu, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd.

Filed Mar. 25, 1971, Ser. No. 128,167

Claims priority, application Japan, Mar. 26, 1970, 45/24833; Mar. 26, 1970, 45/24834

Int. Cl. G03c *1/84*

U.S. Cl. 117—33.3 **2 Claims**

A colloidal manganese dioxide dispersion obtained by the reaction of potassium permanganate with a chemically modified gelatin is particularly useful in a light-sensitive photographic material. The gelatin is treated with a compound capable of reacting with the amino group of the gelatin, e.g. sulfonyl chlorides, carboxylic acid chlorides, acid anhydrides, isocyanates and 1,4-diketones. Undesired halation or irradiation can be effectively prevented.

3,773,540

CATHODOCHROMIC IMAGE SCREEN AND METHOD FOR PREPARING CATHODOCHROMIC SODALITE FOR SAID IMAGE SCREEN

Igal Shidlovsky, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

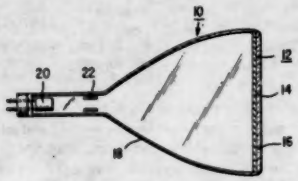
Filed May 27, 1971, Ser. No. 147,392

Int. Cl. G03c *5/02;* **H01j** *29/28*

U.S. Cl. 117—33.5 C **5 Claims**

An image screen of a dark trace cathode ray tube comprises a substrate having a novel sodalite cathodochromic layer thereon. The novel sodalite is characterized in that it is spheri-

cally shaped, porous and contains a sodium halide deficiency of 10 – 20 weight percent. The novel sodalite is prepared by a hydrothermal growth technique employing excess sodium



hydroxide and sodium halide and wherein the reaction vessel is heated to a uniform temperature and rapidly cooled to prevent growth of dedcahedral crystals.

3,773,541

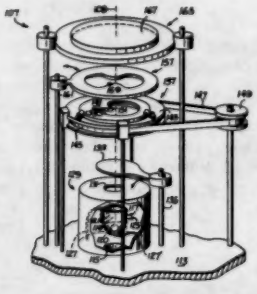
PROCESS FOR ACHIEVING A CONTROLLED GRADIENT DENSITY COATING ON A LIGHT ATTENUATION MEDIUM

David M. Ng, and Charles H. Rehkopf, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 86,030, Nov. 2, 1970, Pat. No. 3,664,295. This application Feb. 7, 1972, Ser. No. 224,301

Int. Cl. C23c *13/02*; **G02b** *5/22*

U.S. Cl. 117—33.3 **4 Claims**



Process is disclosed for disposing a patterned light attenuating coating of a differential density on a substantially transparent optical medium, used in the optical system for photoforming the windowed interstitial web portion of a color cathode ray tube composite screen structure. The process utilizes a hermetic chamber wherein there is included a vaporizing source, a rotatable first pattern mask, a movable second pattern mask, support means for positioning the optical medium, and optical means for monitoring the deposition of coating thereon. The process achieves the deposition of a nonsymmetrical coating formed to modify the photo-exposure illumination from the photo-exposure light source.

3,773,542

SENSITIZING SHEET FOR PRESSURE- OR HEAT-SENSITIVE COPYING PAPER

Takao Hayashi; Hiroharu Matsukawa, and Shizuo Katayama, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 28, 1971, Ser. No. 138,023

Int. Cl. B41m *5/22*

U.S. Cl. 117—36.2 **10 Claims**

A sensitizing sheet capable of forming a distinct color when contacted with a substantially colorless color former comprising a support having thereon a layer containing a phenol resin and an alkaline material is disclosed.

3,773,543

PROCESS FOR THE PRODUCTION OF LUSTER COLOR COATINGS ON CERAMIC, GLASS OF SIMILAR BODIES

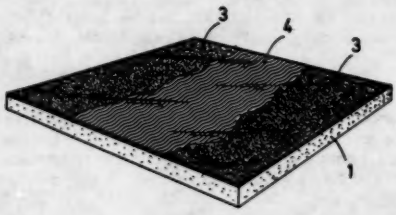
Erwin W. Wartenberg, Brunnenwiesen 6, Stuttgart, Germany

Filed Feb. 24, 1972, Ser. No. 228,954

Claims priority, application Germany, Feb. 25, 1971, P 21 08 849.3

Int. Cl. C23c *11/02*

U.S. Cl. 117—37 **24 Claims**



A process for producing a luster color coating on porcelain, ceramic, glass or similar bodies comprises the application of a thin layer of a composition including a metal and oxides of that metal, and subsequently heating the coated surface.

3,773,544

FLUOROCARBON POLYMER COATED SUBSTRATE

Dennis Sydney Newton, Swansea, and Peter David Winchcombe, Skewen, both of Wales, assignors to British Steel Corporation, London, England

Filed June 1, 1971, Ser. No. 148,904

Claims priority, application Great Britain, June 2, 1970, 26,605/70

Int. Cl. B44d *1/092*

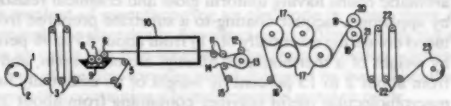
U.S. Cl. 117—49 **20 Claims**

A process for preparing a fluorocarbon polymer coated substrate includes heating a surface coating containing a fluorocarbon polymer and a copolymer based on vinylidene chloride, the surface coating being on a priming coating containing chromium oxide, or chromium oxide with chromium, such that the heating decomposes the copolymer to etch the priming coating to key the fluorocarbon polymer to the priming coating.

3,773,545
SURFACE GLOSS OF VINYL COATINGS

Edward Renninger Erb, Bucks County, and Richard Leroy Maass, Salisbury Township, both of Pa., assignors to GAF Corporation, New York, N.Y.

Filed May 26, 1971, Ser. No. 146,906
Int. Cl. B44d *1/44*; B32b *5/18*
U.S. Cl. 117—64 R **13 Claims**

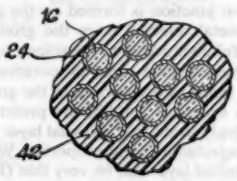


The surface gloss and appearance of vinyl plastisol coatings adhered to substrates are improved by a process comprising passing the coated substrate in cooled condition in contact with a surfacing roll maintained at a temperature of about 320 °–420 °F. and a contact pressure of about 2–100 pounds per linear inch.

3,773,546
COATED GLASS FIBERS AND GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 878,694, Nov. 21, 1969, abandoned. This application Nov. 26, 1971, Ser. No. 202,420
Int. Cl. C03c *17/32*
U.S. Cl. 117—72 **33 Claims**



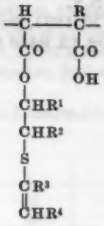
The improvement in the bonding relationship between glass fibers and elastomeric materials in the manufacture of glass fiber reinforced elastomeric products wherein the individual glass fibers are sized and/or bundles of previously sized glass fibers impregnated with a composition containing a resinous material formed by the reaction of an aldehyde with phenolic compound having a mercapto or thio substituent in the meta or para positions.

3,773,547
PRODUCTION OF COATINGS BY CURING WITH IONIZING RADIATION

Herbert Spoor, Limburgerhof, and Kurt Demmler, Ludwigshafen, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhineland, Rhineland/Pfalz, Germany

Filed Nov. 15, 1971, Ser. No. 198,983
Claims priority, application Germany, Nov. 30, 1970, P 20 55 893.4
Int. Cl. B44d *1/50*
U.S. Cl. 117—93.31 **13 Claims**

A process for the production of coatings in which the component serving as binder contains olefinically unsaturated polymeric substances having per molecule at least two units of the general formula

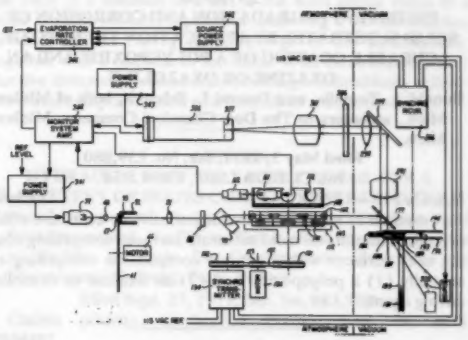


where R, R^1, R^2, R^3 and R^4 are identical or different and denote hydrogen or alkyl of one to four carbon atoms, and the coating is applied to a substrate and cured with ionizing radiation.

3,773,548
METHOD OF MONITORING THE RATE OF DEPOSITING A COATING SOLELY BY ITS OPTICAL PROPERTIES

Martin L. Baker, and Eugene A. Eufusia, both of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Continuation of Ser. No. 2,789, Jan. 14, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 221,397
Int. Cl. C23c *13/04*
U.S. Cl. 117—106 R **7 Claims**



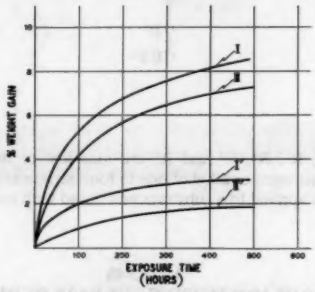
Optical thickness rate monitor for use with a vacuum chamber having an evaporation source. Means is provided for forming an aperture which is exposed to the vapors from the source. An elongate element is provided and means is also provided for progressively advancing the elongate element past the aperture so that it is exposed to the vapor stream from the evaporation source so that any coating material is deposited on the elongate element. Means is provided for supplying a beam of radiation to the element so that the radiation is affected by any coating deposited on the element. Means is then provided for determining the manner in which the radiation is affected by changes in the coating which is being deposited on the element. Automatic means is provided for controlling the rate of evaporation from the evaporation source and monitoring the optical thickness to which the coating is deposited on the element.

3,773,549

CERAMIC COATED POROUS METAL STRUCTURE AND PROCESS THEREFOR

Raymond J. Elbert, Middleburg Heights, and Ernest G. Farrier, Parma, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 30, 1971, Ser. No. 203,364
Int. Cl. B44d *1/02*
U.S. Cl. 117—129 15 Claims



A porous metal structure, and process therefor, having a thin coating of a ceramic material deposited on its surface and on the internal walls of all accessible pores which substantially improves the oxidation resistant characteristics of the structure while effecitvely maintaining its mechanical properties.

3,773,550

INHIBITING DEGRADATION AND CORROSION OF SOLID SUBSTRATES BY APPLICATION THERETO OF A CURABLE COATING OF A POLYEPOXIDE AND AN OXAZINE OR OXAZOLINE

Donald A. Tomalia, and Donald L. Schmidt, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed May 3, 1971, Ser. No. 139,880
Int. Cl. B32b *15/08*; C09d *3/58*
U.S. Cl. 117—132 BE 2 Claims

A method of minimizing the degradative or corrosive effect of ionic materials on solid substrate surfaces comprising coating such surfaces with a curable composition comprising essentially (1) a polyepoxide and (2) an oxazine or oxazoline curing agent.

3,773,551

DISPOSABLE BLANKET FOR PRINTING PRESSES

Michael A. Kiener, Cleveland, and Edward B. Richman, Shaker Heights, both of Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed June 9, 1971, Ser. No. 151,526
Int. Cl. B44d *1/24*; B32b *7/10, 29/00*
U.S. Cl. 117—138.8 A 10 Claims

A disposable or throw-away blanket is provided for a conventional offset printing press. The blanket comprises inexpensive materials inexpensively assembled and can, therefore, be economically discarded after a run on a press. In one form, the blanket comprises a substrate, which may be a resinous film, and a coating on a substrate comprising in admixture an uncured, organic solvent-soluble rubber and synergistic co-fillers consisting essentially of carbon black and a hydrated, colloidal clay which impart ink-receptive and ink-release characteristics to the coating. Optionally, the coating may also contain a polyvinyl resin.

3,773,552

PROCESS OF PROVIDING UNIFORM GLOSS, LACQUER COATED ALKENYL AROMATIC RESIN ARTICLE

Arnett L. Bird; Ronald G. Lehrer, and John E. Mullen, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 17, 1971, Ser. No. 199,741
Int. Cl. B32b *27/06*; B44d *5/00*
U.S. Cl. 117—138.8 UA 5 Claims

Process of preparing articles from thermoplastic alkenyl aromatic resins having uniform gloss and chemical resistance by applying a lacquer coating to a substrate prepared from a blend consisting essentially of (1) from about 85 to 98 percent by weight of a thermoplastic alkenyl aromatic resin, and (2) from about 2 to 15 percent by weight of an essentially linear macromolecular olefin polymer containing from about 25 to about 50 percent by weight of chemically combined chlorine.

3,773,553

SILICON CARBIDE JUNCTION DIODE

G. Sanjiv Kamath, Wellesley, Mass., assignor to Norton Company, Worcester, Mass.

Continuation-in-part of Ser. Nos. 16,855, March 5, 1970, Pat. No. 3,663,722, and Ser. No. 840,255, July 9, 1969, Pat. No. 3,565,703, and Ser. No. 810,977, March 27, 1969, Pat. No. 3,649,384. This application Jan. 4, 1971, Ser. No. 103,797
Int. Cl. C01b *31/36*; B01j *17/20*
U.S. Cl. 117—201 3 Claims

The production of electroluminescent silicon carbide junction diodes is described. These diodes are preferably produced by growth from a silicon carbide or carbon solution in silicon formed between a surface of a p or n-type silicon carbide base crystal and a source of carbon atoms such as a block of solid carbon. The silicon contains one or more p or n-type impurities so that a p-n junction is formed on the crystal. A small quantity of a metal selected from the group consisting of niobium and hafnium is added to the silicon to provide a continued liquid phase despite rapid evaporation of the silicon during the high temperature portion of the growth step when temperatures in excess of 2,400°C are preferably used. This provides a relatively strain-free epitaxial layer (or layers) having optimum electroluminescent properties. When multilayers are grown, the initial layer can be very thin (less than 0.0005 inch) and transparent and the second layer can be opaque and of low resistance due to codoping with boron and aluminum.

3,773,554

ELECTRODES FOR ELECTROCHEMICAL PROCESSES

Anthony Scrutton, and Denis Lee, both of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 1, 1971, Ser. No. 119,892
Claims priority, application Great Britain, Mar. 18, 1970, 13,035/70
Int. Cl. B44d *1/18*
U.S. Cl. 117—215 7 Claims

An electrode for use in electrochemical processes is manufactured by applying to a film-forming metal support member (preferably a titanium member) first a layer of an operative electrode material (preferably a layer of ruthenium dioxide) and then a layer of a film-forming metal oxide (preferably a layer of titanium dioxide by thermal decomposition of a coating comprising an organo-titanium compound) and optionally repeating this two-layer-application sequence at least once.

3,773,555

METHOD OF MAKING AN ELECTRODE

Joseph Bernard Cotton, Sutton Coldfield; Peter Charles Steele Hayfeeld, Castle Bromwich, and Ian Robert Scholes, Sutton Coldfield, all of England, assignors to Imperial Metal Industries (Kynoch) Limited, Witton Birmingham, England

Filed Dec. 14, 1970, Ser. No. 98,184

Claims priority, application Great Britain, Dec. 22, 1969, 62,332/69

Int. Cl. B44d *1/18*

U.S. Cl. 117—217 10 Claims

A method of manufacturing an electrode in which there is chemically or electrically deposited on to a film-forming metal base an oxide of a film-forming metal from a solution containing ions of the film-forming metal, followed by the application of a coating containing a platinum group metal or oxide.

3,773,556

POLYETHYLENE STABILIZED WITH 2,6-DI (1-METHYL HEPTADECYL)-4-ALKYL PHENOL

Bobby A. Rowland, and Stanley L. Tate, both of Carrollton, Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Dec. 29, 1971, Ser. No. 213,546

Int. Cl. B44d *1/34*; C08f *45/58*

U.S. Cl. 117—232 50 Claims

This invention relates to a composition of matter consisting of vulcanizable polyethylene which is protected from oxidative deterioration over a period of time. More specifically this invention is directed to a composition of polyethylene crosslinked by a bisperoxide in the presence of an antioxidant such as 2,6-di(1-methyl heptadecyl)-4-alkyl phenol.

3,773,557

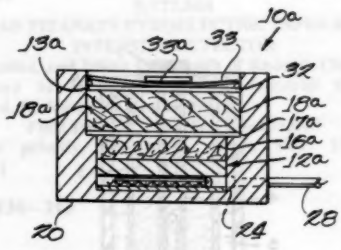
SOLID STATE BATTERY

Ralph T. Mead, Kenmore, N.Y., assignor to The Wurlitzer Company, Chicago, Ill.

Filed Mar. 1, 1972, Ser. No. 230,923

Int. Cl. H01m *43/00*

U.S. Cl. 136—6 LF 15 Claims



A solid state battery construction is disclosed wherein the anode structure can be formed from one of the compounds selected from the group consisting of lithium, lithium and magnesium, lithium and calcium, or lithium, magnesium and calcium. The cathode is formed of conductive metal such as stainless steel and nickel engaging an ionic conductive layer formed of one or more of the compounds selected from the group consisting of rubidium iodide, cesium iodide, tetramethyl ammonium iodide and mixtures of iodine and non-ionic organic compounds such as pyrene or polyvinylpyrene or ion exchange resins such as polyvinylpyridine. The battery structure utilizes two layers of lithium or lithium compounds which sandwich a screen member of nickel to form the conductive contact with the anode.

3,773,558

ELECTRIC ACCUMULATOR WITH BETA ALUMINA SEPARATOR AND ELECTROLYTE CONSISTING OF A SALT IN AN ORGANIC SOLVENT

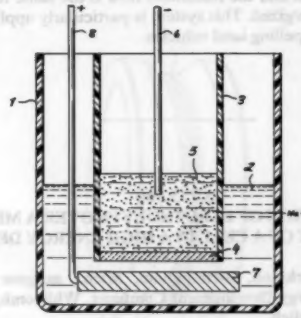
Jean-Claude Charbonnier, Saint Germain-en Laye, France, and Helmut Tannenberger, Geneva, Switzerland, assignors to Battelle Memorial Institute, Carouge/Geneve, Switzerland

Continuation-in-part of Ser. No. 79,204, Oct. 8, 1970. This application Mar. 8, 1972, Ser. No. 232,798

Claims priority, application Switzerland, Mar. 9, 1971, 3400/71

Int. Cl. H01m *35/02*

U.S. Cl. 136—6 LN 16 Claims



The housing of an accumulator cell is divided into an anode compartment and a cathode compartment by a fluidtight separator of beta alumina permselective to ions from an anode which includes a solid phase of alkali or alkaline-earth metal (e.g., sodium) in a liquid phase of an alloy thereof having a solid-liquid boundary at an operating temperature up to about 100° C. The cathode compartment contains an electrolyte in the form of a solution of a salt of the solid anode metal in a polar organic solvent, capable of dissolving a virtual reaction product formed during the discharge of the accumulator, together with a cathode in the shape of an electronically conductive sintered structure incorporating a cathodically reducible metal compound such as a fluoride of a transition metal.

3,773,559

HYDRAULIC TYPE VOLTAGE CONTROL FOR A BATTERY OF SERIES CONNECTED FUEL CELLS

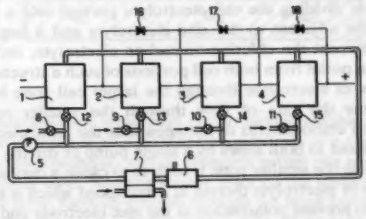
Bernard Warszawski, Paris; Bernard Verger, Palaiseau, and Paul Domenjoud, Neuilly sur Seine, all of France, assignors to Societe Generale De Constructions Electriques Et Mecaniques (Alsthom), Paris, France

Filed Sept. 27, 1971, Ser. No. 183,769

Claims priority, application France, Sept. 30, 1970, 7035452

Int. Cl. H01m *27/00*, *27/14*

U.S. Cl. 136—86 B 7 Claims



In a battery of several fuel cells connected in series and supplied with a common recycled electrolyte flow, the first cell 1

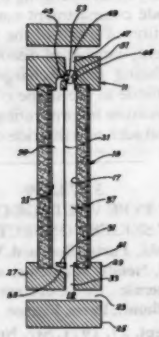
is continuously supplied with an adjustable flow of energizing reagent, the adjustment being over a range carrying the voltage across the terminals of the cell between minimum and maximum working value. Each of the other cells (2, 3, 4), which may or may not be supplied with reagent during the use of the battery, is shunted by a rectifier (16, 17, 18) that allows current to pass in the direction of the normal discharge current of the battery as a whole, and the group of cells is supplied with energizing reagent having a total flow subject to adjustment between the flow necessary to obtain the minimum voltage at the terminals of the first cell and that which provides the maximum voltage at the terminals of the battery, this total flow being made up of a variable number of individual cell flows such that at a given moment, ratio between the flow at that moment and the maximum flow is the same for all the cells being energized. This system is particularly applicable to motors for propelling land vehicles.

3,773,560

CIRCULATION OF ELECTROLYTE OVER A METAL ELECTRODE OF A CELL IN A HIGH ENERGY DENSITY BATTERY

Harry K. Bjorkman, Birmingham, Mich., assignor to Occidental Energy Development Company, Whitcomb, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 200,068
Int. Cl. H01m *31/00, 27/12*
U.S. Cl. 136—86 R **6 Claims**



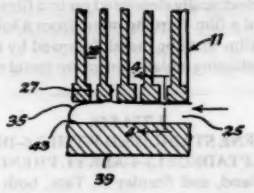
A cell of a high energy density secondary battery, such as one having zinc and chlorine-on-carbon electrodes and a separator dividing the cell electrolyte portion into a smaller flow zone adjacent to the zinc electrolyte and a larger flow zone adjacent the chlorine-on-carbon electrolyte, includes a common outlet from both cell portions of such a structure that the flow of electrolyte through the larger cell zone helps to determine the rate of flow through the smaller zone. In preferred embodiments of the apparatus the same electrolyte is circulated to both zones by a single pump or driving means, the flow in the smaller zone is such as to cause a desirable circulation of electrolyte therein at a low speed which is still sufficient to prevent polarization at the zinc electrode and pitting and dendritic formations on it, and the rate of flow through such lesser flow zone is regulated by having the outlet from such zone communicate with a restricted portion of a Venturi or equivalent orifice in the main flow zone outlet passage.

3,773,561

ISOLATION OF CELLS OF A BATTERY STACK TO PREVENT INTERNAL SHORT-CIRCUITING DURING SHUTDOWN & STANDBY PERIODS

Harry K. Bjorkman, Birmingham, Mich., assignor to Occidental Energy Development Company, Whitcomb, Madison Heights, Mich.

Filed Nov. 18, 1971, Ser. No. 200,122
Int. Cl. H01m *27/12*
U.S. Cl. 136—86 A **5 Claims**



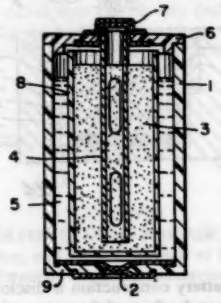
Internal short-circuiting of a plurality of electric cells of a cell stack is prevented during shutdown or standby by sealing off the cells from electrical contact with each other by closing off inlet and outlet ports to isolate electrolyte portions in the individual cells. A preferred apparatus for carrying out the invention includes membranes which, in response to selective hydraulic pressure, open or close ports of the cell inlets and/or exits, to allow flow of electrolyte through the cells during charging or discharging and to prevent it during shutdown or standby.

3,773,562

ALKALINE PRIMARY BATTERY CELLS

Alexander Pinkowski, and Hans-Werner Uhlig, both of Berlin, Germany, assignors to Kombinat VEB Galvanische Elemente, Zwickau, Germany

Filed Dec. 13, 1971, Ser. No. 207,023
Int. Cl. H01m *21/00*
U.S. Cl. 136—107 **10 Claims**



Alkaline primary battery cells, comprising conventional cylindrical manganese-dioxide and powdery zinc electrodes with a separator therebetween, including a non-metallic, plastic beaker for lodging the electrodes, and at least one electrical contact in a terminal portion of the beaker, provided in a hermetically sealed manner, the contact being associated with one of the electrodes. The plastic beaker is preferably from a material permeable to hydrogen. The electrical contact is either molded into the beaker or the latter is made, at least in

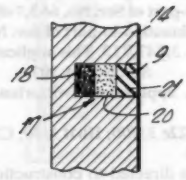
part, from an electrically conductive material, such as a plastic having metal powder or graphite therein. The contact is linked to the appropriate electrode by a metallic conductor which may be a wire or a sleeve, the latter with smooth or perforated walls.

3,773,563

LIFE INDICATOR FOR PRIMARY CARBON ZINC BATTERIES

Edgar P. Eaton, Jr., Morristown, and Bernard P. Rouvet, Montville, both of N.J., assignors to The Carbone Corporation, Boonton, N.J.

Filed Feb. 22, 1972, Ser. No. 227,755
Int. Cl. H01m 45/06
U.S. Cl. 136—182 7 Claims



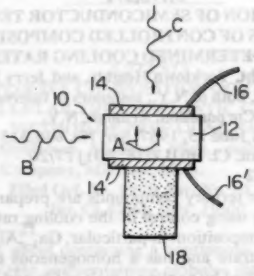
A battery indicator which remains dormant in the body of a zinc electrode until the zinc is eaten away by electrochemical action and a portion of the indicator material is exposed to the electrolyte. Dye within the indicator is then liberated and colors the electrolyte solution, providing a signal that the battery should be replaced within a specified time interval. To provide fast mixing action of the dye in the electrolyte, a chemical reactor such as aluminum powder or an alkali hydroxide is also placed in the indicator. In one alternate arrangement, a spring is compressed in the indicator cavity so that it will provide fast exit velocity for the dye and chemical mixing agent.

3,773,564

LEAD TITANATE PYROELECTRIC INFRA-RED INTENSITY DETECTOR

Eiso Yamaka, and Ichiro Ueda, both of Kadoma City, Japan, assignors to Matsushita Electric Indusrial Company, Limited, Kadoma City, Osaka, Japan

Filed Mar. 17, 1972, Ser. No. 235,649
Claims priority, application Japan, Mar. 19, 1971, 46/15901
Int. Cl. H01v 3/00
U.S. Cl. 136—213 1 Claim



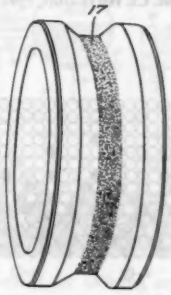
An infra-red intensity detector which comprises a polarized ceramic substrate composed of $PbTiO_3$, MnO_2 of from 0.8 to 1.2 mol percent of $PbTiO_3$, and La_2O_3 of from 1.0 to 2.0 mol percent of $Pb\ TiO_3$, and at least one couple of electrodes connected to the ceramic substrate and disposed in the direction of polarization of the substrate.

3,773,565

ZONE REFINING

Angus Charles Pye, Harpenden, England, and Bengt Lundgren, Ulricehamn, Sweden, assignors to SKF Industries, Inc., King of Prussia, Pa.

Filed Nov. 27, 1970, Ser. No. 93,018
Int. Cl. C21d 1/34, 9/40
U.S. Cl. 148—1 5 Claims



A method of making a machine component comprising forming the component to shape and, before heat treating to harden it or finish machining it, re-melting at least one zone on its surface by means of an energy beam while the component is in a vacuum.

3,773,566

METHOD FOR FABRICATING SEMICONDUCTOR DEVICE HAVING SEMICONDUCTOR CIRCUIT ELEMENT IN ISOLATED SEMICONDUCTOR REGION

Takashi Tsuchimoto, Rodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1971, Ser. No. 113,938
Claims priority, application Japan, Feb. 9, 1970, 45/10660
Int. Cl. H01l 7/54
U.S. Cl. 148—1.5 7 Claims

A semiconductor integrated circuit device is fabricated in an epitaxial layer of an *n*-type Si on a substrate of p-type Si by forming semiconductor circuit elements within one surface of the epitaxial layer, forming a mask layer on the surface of the epitaxial layer, forming grooves through the mask layer, which surround each semiconductor circuit element, so as to expose the surface of the epitaxial layer, diffusing boron into the surface of the exposed portions of the epitaxial layer through the grooves, maintaining the substrate at a temperature of 700°C, and directing 10^{16} argon ions per square centimeter having an

energy of 50 KeV toward the surface, whereby p-type regions are extended quickly from the surface of the epitaxial layer to that of the substrate to isolate the semiconductor circuit elements from each other.

3,773,567

DIFFUSED HETEROJUNCTION MULTILAYER COATINGS FOR ELECTROSTATIC PHOTOGRAPHY

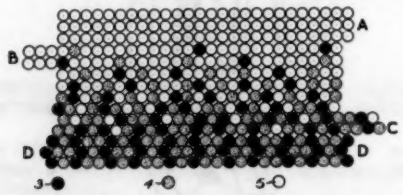
Frank C. Gillespie, Findon, South Australia, Australia, assignor to The Commonwealth of Australia care of The Secretary, Department of Supply, Parkes, Canberra, Australian Capital Territory, Australia

Filed Dec. 30, 1969, Ser. No. 889,136

Claims priority, application Australia, Dec. 30, 1968, 48483/68

Int. Cl. H01l *7/00, 7/44*

U.S. Cl. 148—1.5 **7 Claims**



A method of coating surfaces for electrostatic photography which consists in successively depositing dissimilar materials on to a surface under conditions such that partial diffusion of one material into the adjacent material occurs at the interface between the dissimilar materials to an extent such that zones of p-type and n-type semiconductors are produced in the diffused region which act together as rectifying junctions to allow control of holes and electrons produced by photons which enter such an area, the first layer preferably being a conductor or semiconductor and the second layer being a photoconductor or an insulator with some injected charge mobility.

3,773,568

METAL COATING PROCESS

William J. Hahn, Plymouth, Pa., assignor to U.S. Radium Corporation, Morristown, N.J.

Filed Mar. 21, 1972, Ser. No. 236,784

Int. Cl. B44d *1/52;* **C23f** *7/26*

U.S. Cl. 148—6.2 **3 Claims**

A method for producing a permanently adherent image on an aluminum substrate is disclosed. The process comprises basically three areas of preparation; including (1) surface preparation of the aluminum substrate, (2) a screening procedure to apply the design or nomenclature to the aluminum substrate, and (3) a procedure for applying a protective lacquer to the screened image to permanently protect the screened image.

3,773,569

PROCESS OF MAKING HIGH STRENGTH, HIGH DENSITY, HIGHLY DUCTILE URANIUM-TITANIUM ALLOY

Ralph E. Edelman, Philadelphia, Pa., and Anthony Saia, Williamstown, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 1, 1971, Ser. No. 185,812

Int. Cl. C21d *1/18;* **F42b** *11/14*

U.S. Cl. 148—11.5 F **6 Claims**

The step of furnace tempering a solution treated, water-quenched, worked cast ingot at 600°F for about 4 hours in an inert atmosphere and permitting the ingot to furnace cool in that atmosphere yields an uranium-1.25 titanium alloy having the following physical properties:

Tensile strength : 234,700 psi
Yield strength : 172,700 psi
Elongation in 1 inch : 17%
Nominal density : 18.5g/cc

3,773,570

CONSTRUCTION ELEMENT HAVING STRONGLY NEGATIVE TEMPERATURE COEFFICIENTS OF ELASTICITY MODULI

Samuel Steinemann, Liestal, and Martin Peter, Vesenaz, both of Switzerland, assignors to Institut Dr. Ing. Reinhard Straumann A.G., Waldenburg, Switzerland

Continuation-in-part of Ser. No. 663,748, Aug. 28, 1967, abandoned, Continuation-in-part of Ser. No. 631,686, April 18, 1967, Pat. No. 3,547,713. This application Oct. 27, 1970, Ser. No. 84,307

Claims priority, application Switzerland, Aug. 29, 1966, 12494/66

Int. Cl. C22c *33/00;* **H01l** *3/00;* **C22b** *29/00*

U.S. Cl. 148—32.5 **7 Claims**

The disclosure is directed to construction elements having highly negative temperature coefficients of the moduli of elasticity, and which are characterized in that the construction elements consists of, or contain as the predominant phase, a metal having a paramagnetic atomic susceptibility $x \geqq 40$, 10^{-6} emu/g-atom at room temperature, and also a positive temperature coefficient of this susceptibility $1/x\ dx/dT$. Furthermore, the construction element is characterized by a preferred orientation of the crystallites of the metal and which preferred orientation has a rigid orientation relationship to the occurring mechanical load.

The materials of the construction elements may be, for example, alloys of Sr and Ca, Ti and Al, Zr and Sc, and multicomponent alloys as Ti-Zr-Al, Ti-Sc-Al. The elements may consist of a samarium-base alloy. The construction elements also may be characterized in that the metal contains limited amounts of B, C, N or O, so-called interstitials of low atomic size.

The disclosure is also directed to methods of producing the preferred orientations by cold-working, annealing, or both and these processes are also applicable for hardening the metal by dispersion or precipitation.

A specific example of an article in the disclosure is a tuning fork useable as a temperature sensor by virtue of its marked change in resonance frequency with changes of temperature.

3,773,571

PREPARATION OF SEMICONDUCTOR TERNARY COMPOUNDS OF CONTROLLED COMPOSITION BY PREDETERMINED COOLING RATES

Hans S. Rupprecht, Yorktown Heights, and Jerry M. Woodall, Putnam Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 15, 1967, Ser. No. 646,315

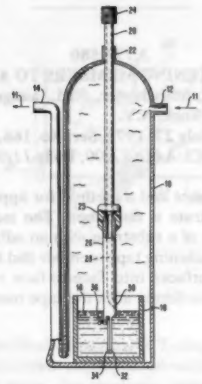
Int. Cl. H01l *7/38;* **B01j** *17/20*

U.S. Cl. 148—172 **19 Claims**

Semiconductor ternary compounds are prepared by liquid phase epitaxy by using control of the cooling rate to control the crystalline composition. In particular, $Ga_{1-x}Al_xAs$ is grown on a GaAs substrate and has a homogeneous composition. This is accomplished by cooling a melt of Ga and Al saturated with GaAs in Al_2O_3 crucible using a single crystalline wafer of GaAs as the substrate. Critical parameters are an excess of GaAs, the Al/Ga ratio, the growth temperature, and the cool-

ing rate. Electroluminescent diodes made from the $Ga_{1-x}Al_xAs$ have relatively high quantum efficiencies, e.g., 3.3 percent when emitting light of energy 1.70 electron volts through an epoxy dome with a matching index of refraction.

Illustratively, for the electroluminescent diodes with 3.3 percent quantum efficiency, exemplary parameters included a



melt composition of 20 grams of Ga, 50 milligrams of Al, growth rate of 1°C per minute over a temperature range of 950°C to 920°C for n-type dopant of 5 milligrams of Te and an additional 50 milligrams of Zn from 920°C to 860°C for counter doping to p-type. Further, a GaAs - $Ga_{1-x}Al_xAs$ heterojunction is obtained if the cooling rate is changed abruptly from 1°C per minute to greater than 10°C per minute.

3,773,572

PENTAERYTHRITOL TETRANITRATE COATED WITH SILICONE

Hugh Thomas, Irvine, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Sept. 22, 1972, Ser. No. 291,317

Claims priority, application Great Britain, Oct. 4, 1971, 46,049/71

Int. Cl. C06b *19/02*

U.S. Cl. 149—11 **10 Claims**

Improved Pentaerythritol Tetranitrate is prepared by treating the PETN with silicone to reduce its water permeability. The improved PETN is especially useful for detonating cord.

3,773,573

EXPLOSIVE COMPOSITION CONTAINING MONOCELLULAR THERMOPLASTIC GLOBULES AND METHOD OF PREPARING SAME

Thomas E. Slykhouse, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 15, 1970, Ser. No. 81,147

Int. Cl. C06b *1/04, 19/00*

U.S. Cl. 149—21 **14 Claims**

A blasting agent containing a continuous phase and a plurality of discrete gas-containing globules dispersed therein is improved by incorporating into the blasting agent, as a source of such globules, hollow essentially monocellular thermoplastic particles.

3,773,574

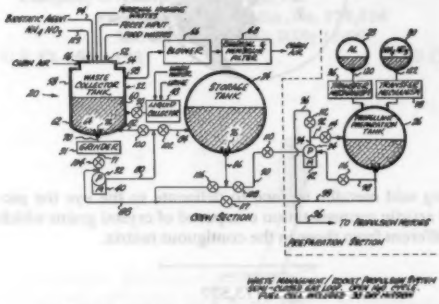
ROCKET PROPELLANT COMPOSITION INCLUDING HUMAN BODY GENERATED WASTE MATERIALS

Robert M. Bridgforth, Jr.; George S. Sutherland, both of Mercer Island, and Carl D. Good, Seattle, all of Wash., assignors to Rocket Research Corporation, Seattle, Wash.

Filed Apr. 13, 1967, Ser. No. 630,562

Int. Cl. C06d *5/06, 5/10*

U.S. Cl. 149—22 **13 Claims**



A system and method for utilizing and disposing of carbonaceous waste products accumulated aboard a spaceship, including human body generated wastes and other carbonaceous wastes, by processing the waste products into rocket propellants and utilizing such propellants for spaceship propulsion. The propellant compositions thus formulated are characterized by the presence of one or more fuel constituents and one or more inorganic oxidizer constituents (e.g., ammonium nitrate) in homogeneous admixture with the human body generated waste materials (e.g., human excrement).

3,773,575

METHOD OF BURNING A COMBUSTIBLE SUBSTANCE BY CONTACT WITH COMBUSTION COMPOSITION

David C. Sayles, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Division of Ser. No. 202,694, Nov. 26, 1971. This application Feb. 23, 1973, Ser. No. 334,790

Int. Cl. C06b *15/00*

U.S. Cl. 149—22 **9 Claims**

A combustion composition comprising a member selected from the group consisting of ferrocene, carborane, ferrocenyl and carboranyl derivatives; activated carbon; ammonium perchlorate; and aluminum powder. In operation, pellets or granules of the mixture are coated with calcium phosphate and applied to a combustible substrate.

3,773,576

CRYSTAL SKETCHING

William W. Pond, Westminister, Md., assignor to Marvalaud, Inc., Westminister, Md.

Filed June 18, 1971, Ser. No. 154,475

Int. Cl. C23f *1/00;* **B44c** *1/22*

U.S. Cl. 156—6 **8 Claims**

Refurbishable works of art are produced on a crystalline metallic surface by forming with plastic deformation an artistic representation, annealing said crystalline surface to relieve the metallic matrix of the imposed energy of plastic deformation in the form of a locally recrystallized surface

which is different in crystal grain size and frequently in geometric distribution from the original metallic matrix, and

etching said metallic surface to delineate to the eye the pictorial artistic representation composed of crystal grains which are different from those in the contiguous matrix.

3,773,577

COMPOSITION FOR ETCHING COPPER WITH REDUCED SIDEWAYS-ETCHING

Yasuichi Shibasaki, and Koichi Oyama, both of Yokohama, Japan, assignors to Nippon Peroxide Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1972, Ser. No. 243,069
Claims priority, application Japan, May 13, 1971, 46/31583
Int. Cl. C23f *1/02*
U.S. Cl. 156—8 **4 Claims**

An etching bath composition which reduces the extent of side or lateral etching is prepared by admixing an additive selected from a group consisting of aliphatic amines having a straight chain of more than four carbon atoms, cyclohexylamine, benzotriazole or N,N-dialkylaniline, with a basic composition of sulfuric acid and hydrogen peroxide.

3,773,578

METHOD OF CONTINUOUSLY ETCHING A SILICON SUBSTRATE

William B. Glendinning, Belford, and Wellington B. Pharo, Neptune, both of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. Nos. 124,915, March 16, 1971, Pat. No. 3,711,324, and Ser. No. 94,150, Dec. 1, 1970, Pat. No. 3,672,980, and Ser. No. 162,688, July 14, 1971, Pat. No. 3,718,503. This application Dec. 30, 1971, Ser. No. 214,461
Int. Cl. H01l *7/44*
U.S. Cl. 156—17 **3 Claims**

A silicon substrate is continuously etched by exposing the top surface of the silicon substrate in a closed chamber at a low temperature to a chemical vapor environment of nitric oxide, hydrogen fluoride, water and oxygen.

This invention relates in general to the art of treating a silicon substrate and in particular, to a method of continuously etching a silicon substrate to any desired depth.

3,773,579

METHOD OF TREATING ALUMINUM STRIP

Christian E. Michelson, and Sheldon W. Dean, Jr., both of Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed July 15, 1971, Ser. No. 165,781
Int. Cl. C23g *1/22, 3/02*
U.S. Cl. 156—21 **9 Claims**

The disclosure teaches a method for producing an improved surface on certain aluminum alloys. The process is characterized by applying certain organic compounds to aluminum strip, heating the coated strip to decompose said compound and generate atomic hydrogen, whereby said hydrogen is adsorbed and absorbed by the aluminum strip, cooling said strip, and physically altering the surface of said strip by applying at least one chemical compound thereto which reacts with said strip.

3,773,580

BONDING FASTENING MEMBERS TO A SUBSTRATE

George A. Provost, Manchester, N.H., assignor to American Velcro Inc., New York, N.Y.

Filed July 27, 1971, Ser. No. 166,638
Int. Cl. A41h *37/00*; B65c *11/06*
U.S. Cl. 156—66 **7 Claims**

A fastening member and a method for applying a fastening member to a substrate is described. The method comprises coating the surface of a substrate with an adhesive, activating the adhesive on a fastening tape member and then bringing the adhesive coated surfaces into face-to-face relationship with sufficient pressure to firmly affix the tape member to the substrate.

3,773,581

A METHOD OF BUILDING UNITARY-IMPREGNATED FIBER-GLASS STRUCTURE

Thomas L. Stanley, 8912 Bocage Pl., New Orleans, La.

Filed Oct. 14, 1971, Ser. No. 189,364
Int. Cl. B63b *3/02*
U.S. Cl. 156—71 **1 Claim**

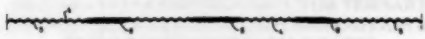
Method of building a large resin impregnated fiber-glass structure by assembling and fastening together framing members, sheathing the fastened framing members with thin sheets of cured resin impregnated fiber-glass, incorporating said thinly sheathed framing into the finished structure by using it as a "lay up" mould for the successive application and curing of resin impregnated fiber-glass material laminations to said sheathing and over all joinings of framing and sheathing.

3,773,582

YARN CONSISTING OF STIFF HAIR AND PROCESS FOR MAKING THE SAME

Helmut Rother, Iserlohn, Germany, assignor to Henschke & Co. Hansel-Robhaar KG, Iserlohn, Germany

Filed Apr. 9, 1971, Ser. No. 132,851
Int. Cl. B65h *69/02*; D02g *3/14*
U.S. Cl. 156—158 **9 Claims**



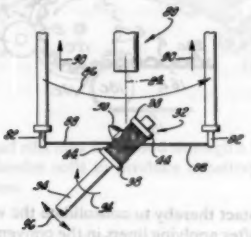
Yarn consisting primarily of stiff hair and a process for making such yarn for use as stiffening inserts and the like. The process comprises placing stiff hairs of natural or synthetic origin consecutively in lengthwise sections, wrapping said sections with natural or synthetic threads so as to tie them together, and form an elongated unit of any desired length, and applying to at least some sections of the tied unit a coating of plastic material. The plastic coating is preferably heated and compressed while in thermoplastic state, whereby the hairs are glued together and the yarn acquires great strength. The fineness of the yarn is between Nm 16 and 24.

3,773,583

TWO-STAGE FILAMENT WINDING OF T-SHAPED HOLLOW PRODUCTS

Robert W. Quirk, Los Angeles, Calif., assignor to Rheem Fluid Systems, Inc., Chatsworth, Calif.

Filed Dec. 17, 1971, Ser. No. 209,185
Int. Cl. B65h *81/02*
U.S. Cl. 156—175 2 Claims



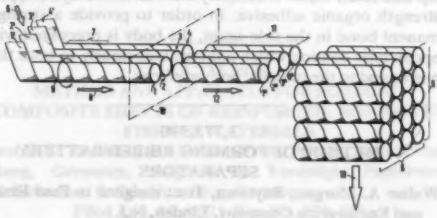
A two stage method of making a T-shaped hollow product of reinforcing material impregnated with a synthetic resin. During the first stage, the synthetic resin impregnated reinforcing material is wound at various angles around a mandrel body carrying a laterally extending, bullet shaped neck portion, any windings which engage the bullet shaped neck portion sliding laterally inwardly therealong to regions adjacent the base thereof. In the second stage, the bullet shaped neck portion is replaced by a second neck portion at least part of which is generally cylindrical, the synthetic resin impregnated reinforcing material being wound around such second neck portion to form the leg of the T-shaped hollow product. The result of this two stage technique is a concentration of winding material at the junction of the body and the neck of the T-shaped hollow product for greater strength.

3,773,584

METHOD FOR MANUFACTURING LOAD BEARING STRUCTURES, SUCH AS STRUCTURAL SLABS OR THE LIKE, AND APPARATUS FOR CARRYING OUT THE METHOD

Hans-Joachim Dietzsch, Villars-sur-Ollon, and Otto Dietzsch, Stein am Rhein, both of Switzerland

Filed Apr. 22, 1971, Ser. No. 136,517
Claims priority, application Switzerland, Apr. 24, 1970, 6145/70; Aug. 31, 1970, 12969/70
Int. Cl. B65h *81/03*
U.S. Cl. 156—191 18 Claims



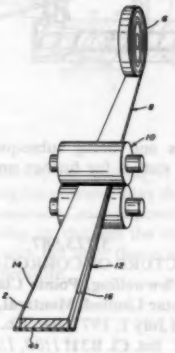
A method for manufacturing load bearing structures, such as structural slabs or the like, from panels formed by tube sections extending parallel to each other and being connected together, each of which panels can be connected to at least one ply which may be provided with apertures, said ply covering completely or partially the front faces of all the tube sections lying in one plane.

3,773,585

METHOD OF FORMING A LAMINATE STRUCTURE

Louis M. Butcher, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 10, 1971, Ser. No. 179,514
Int. Cl. H01g *13/00*; B31c *13/00*
U.S. Cl. 156—192 3 Claims



A method of forming a laminate including providing an elongated laminate strip having a metal ply and a layer of a thermoplastic material bonded thereto with the metal ply and thermoplastic layer initially having a substantially equal width. Compressively reducing the thickness of the thermoplastic layer and simultaneously establishing transverse enlargement of the thermoplastic layer in both transverse directions to cause the thermoplastic layer to extend farther outwardly than the metal ply. The thickness reduction and transverse expansion may be effected at a laminate temperature of about 250° to 600° F. The reformed laminate may subsequently be coiled in order to establish an electrical coil having insulation between edges of adjacent wraps of the metal ply.

3,773,586

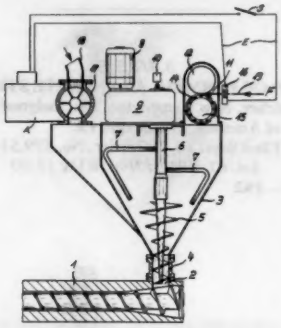
METHOD OF PROCESSING SYNTHETIC PLASTIC MATERIALS FOR SUBSEQUENT EXTRUSION AND REGENERATION

Heinrich Koch, Jakobstr. 88, and Heinz Staneck, both of Siegburg, Germany, assignors to said Koch, by said Staneck

Filed Mar. 4, 1971, Ser. No. 120,870
Int. Cl. B31c *13/00*; B32f *31/18*; B29h *19/00*
U.S. Cl. 156—193 1 Claim

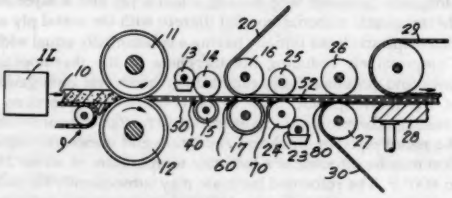
A method of treating foil webs and strips of synthetic material preparatory to feeding the same to an extruder for regeneration, according to which the foil web or strip is in a continuous manner wound upon a grate roller and with increasing thickness on said roller is, while being subjected to pressure from the outside, cut into individual sections while simultaneously said layers are at their cut edges fused to each other layer by layer, said layers being pressed through

between the grate bars of said grate roller into the interior of said grate roller, thereby to form strands and the thus formed strands being withdrawn by conveying means and cut into



multi-layer pieces and being subsequently conveyed to a supply station or station for further processing the thus obtained material.

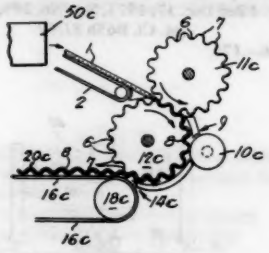
3,773,587
MANUFACTURE OF CORRUGATED BOARD
Herbert Martin Flewwelling, Pointe Claire, Quebec, Canada, assignor to Domtar Limited, Montreal, Canada
Filed July 1, 1971, Ser. No. 158,926
Int. Cl. B31f 1/00, 1/26
U.S. Cl. 156—201 **7 Claims**



Corrugated medium is made by passing a dry formed, substantially non-consolidated, fibrous web between corrugated rolls to corrugate the web longitudinally and to effect bonding of the fibres thereby to consolidate the web in corrugated form.

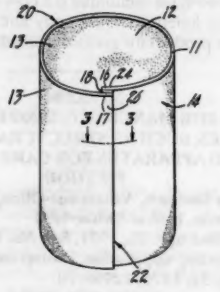
3,773,588
CORRUGATOR
Alistair K. Bodycomb, Baie D'Urfe, Quebec, Canada, assignor to Domtar Limited, Montreal, Canada
Filed July 1, 1971, Ser. No. 158,851
Int. Cl. B31f 1/20, 1/22
U.S. Cl. 156—205 **2 Claims**

A method of making a corrugated medium which permits the use of scrap from a corrugating plant. It includes the steps of forming a web of substantially non-bonded fibres, passing the web through a nip formed by a pair of heated corrugating rolls to corrugate the web and press the fibres into intimate



bonding contact thereby to consolidate the web in corrugated form, thereafter applying liners in the conventional manner.

3,773,589
CAN BODY
Edward William Kaiser, Arlington Heights, and Kenneth Richard Rentmeester, Barrington, both of Ill., assignors to American Can Company, Greenwich, Conn.
Continuation of Ser. No. 830,918, May 22, 1969, abandoned, and a continuation-in-part of Ser. No. 491,211, Sept. 29, 1965, abandoned. This application Nov. 26, 1971, Ser. No. 202,096
Int. Cl. B32b 1/08, 15/08, 27/38
U.S. Cl. 156—218 **7 Claims**

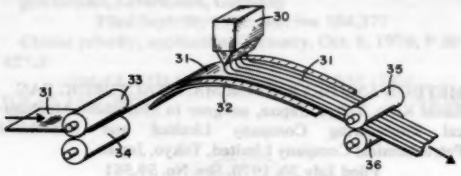


A metal can body is formed with a longitudinally extending lap side seam which is securely bonded with a nylon type high strength organic adhesive. In order to provide a strong permanent bond in the side seam, the body is precoated with an epoxy type coating which adheres tenaciously to both the adhesive and to the metallic body surfaces.

3,773,590
METHOD OF FORMING RIBBED BATTERY SEPARATORS
Walter A. Morgan, Baytown, Tex., assignor to Esso Research and Engineering Company, Linden, N.J.
Filed July 16, 1971, Ser. No. 163,206
Int. Cl. H01m 3/02
U.S. Cl. 156—244 **5 Claims**

Ribs are formed on a nonwoven mat to produce a battery separator. The ribs are formed by extruding a foamed polymer onto the nonwoven mat by extruding the foamed polymer

through a multi-hole die as the nonwoven mat follows an arc passing over a mat backup plate. After the ribs have been extruded and the foamed polymer is still soft, the nonwoven mat



with the extruded ribs may be passed through a fixed gap such as a pair of calender rolls to produce a battery separator of uniform thickness.

3,773,591

MANUFACTURE OF CARRIER BAGS

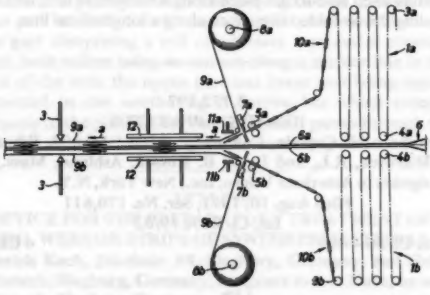
John Blair, Higherford, England, assignor to Coloroll Limited, London, England

Filed May 3, 1971, Ser. No. 139,583

Claims priority, application Great Britain, Feb. 1, 1971, 3,585/71

Int. Cl. B31b *1/86;* **A45c** *3/04;* **B32b** *31/20*

U.S. Cl. 156—265 **3 Claims**



The invention is concerned with the manufacture of a plastics carrier bag including a handle loop having the ends attached to an anchor element which is trapped between two layers of material adjacent the bag mouth. In the invention handle loop assemblies are drawn into a machine which continuously manufactures the bags and traps the anchor elements.

3,773,592

METHOD AND APPARATUS FOR FORMING COMPOSITE SHEETS OF REINFORCED, NONWOVEN FIBROUS MATERIALS

Horst F. E. Nicolaus, and Helmut E. W. Pietsch, both of Nurnberg, Germany, assignors to Vereinigte Papierwerke Schickedanz & Co., Nurnberg, Germany

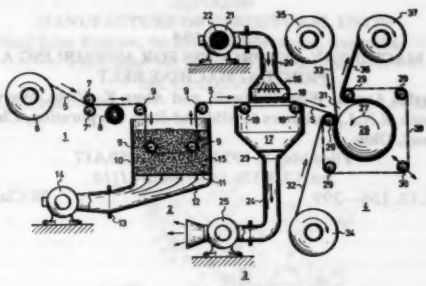
Filed Aug. 10, 1971, Ser. No. 170,483

Claims priority, application Germany, Aug. 14, 1970, P 20 40 500.9

Int. Cl. B29c *23/00;* **B29f** *5/00;* **B05b** *5/00*

U.S. Cl. 156—272 **12 Claims**

A process is disclosed for producing non-woven flat objects which are reinforced by means of a reinforcing inlay, in which the reinforcing inlay is electrostatically charged, then coated with a thermoplastic binder in powder form, the excess powder removed, and the inlay joined with at least one layer of a fiber fleece. The electrostatic charge is preferably produced by frictional contact of the inlay with an electrically



non-conductive material, the coating is preferably accomplished by conducting the charged inlay through a fluid bed of said powder, the removal of excess powder is preferably accomplished by blowing air through the coated inlay, and the joining of the inlay with the fiber fleece is preferably accomplished by heat and pressure.

3,773,593

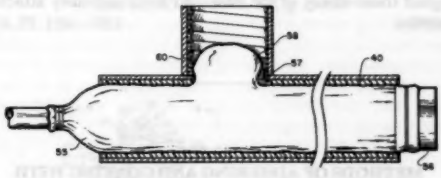
METHOD OF MAKING HOT GAS MANIFOLD

James L. Casadevall; James P. Arnold, and Rudy D. Buzlea, all of Orlando, Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 764,506, Oct. 2, 1968, abandoned. This application Mar. 25, 1971, Ser. No. 128,110

Int. Cl. F01n *7/16*

U.S. Cl. 156—294 **44 Claims**



A lined manifold for carrying high temperature, high pressure gases for prolonged periods of time, with the liner portion of the manifold being prepared out of suitably reinforced thermosetting resin material or the like, that has been formed into a diameter in keeping with the inner diameter of the manifold, and brought to the partiallly cured condition. Thereafter, upon insertion into the metal portion of the manifold, the liner portion is usually caused to expand into firm contact therewith, and is then brought to the cure temperature so that the liner portion can be converted to the fully cured condition, and thus become an integral part of the manifold. We prefer to use preimpregnated bias cut tape made of high temperature

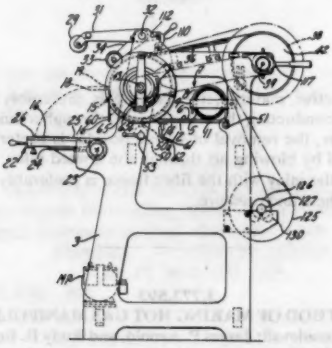
materials in manufacturing the liners, for it is easier to work with, and less likely to burn and slough off when on the interior of a manifold than in the case of liners made of other types of tape or material. Manifolds made in accordance with this invention can be operated at a lower external temperature than can ordinary, unlined manifolds, and hence mounting and shielding problems are minimized.

3,773,594

MACHINERY AND PROCESS FOR ASSEMBLING A PRINTING MACHINE BELT

Charles Aaron, West Caldwell, and Aimo K. Virta, Warton, both of N.J., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed May 5, 1972, Ser. No. 250,617
Int. Cl. B32b *3/10*; B41b *11/18*
U.S. Cl. 156—299 **20 Claims**



Machinery and process for attaching flexible printing plates to a flexible non-elastic base sheet under approximate conditions of deformation sustained by the printing belt of a belt-printing machine during operation. Provision is made for highly accurate locating and indexing of the plates relative to each other and the base sheet, and the attachment of such plates in successive groups wherein each group of plates is aligned transversely of the base and simultaneously attached thereto.

3,773,595

METHODS OF ADHERING AND COATING WITH REACTIVE MIXTURES OF POLYESTERS AND POLYISOCYANATES

Christian Burba, Luenen; Eugen Griebsch, Unna, and Bernhard Krieger, Bergkamen, all of Germany, assignors to Schering AG., Berlin and Bergkamen, Germany

Filed June 18, 1971, Ser. No. 154,598
Claims priority, application Germany, June 23, 1970, P 20 32 297.8
Int. Cl. C09j *3/14*
U.S. Cl. 156—332 **9 Claims**

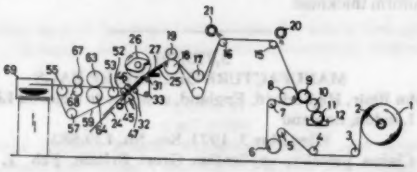
Methods of adhering materials, particularly rubbers or chlorine-containing synthetic resins, with a contact adhesive comprising a reactive mixture of an aromatic polyisocyanate and either a polyester, containing hydroxy groups, prepared from alcohols having two or three hydroxy groups and from poly-omega hydroxy caproic acid and/or epsilon caprolactone, or a prepolymer formed between an excess of such a polyester and an aromatic polyisocyanate. Methods of adhering or coating materials with a mixture of an aromatic polyisocyanate, a prepolymer as described above, and a catalyst for forming urethane bonds.

3,773,596

METHOD AND DEVICE FOR MANUFACTURING BAG

Takashi Kato, Tokyo, Japan, assignor to Musashino Mechanical Engineering Company Limited and Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Filed July 30, 1970, Ser. No. 59,561
Claims priority, application Japan, July 30, 1969, 44/59695
Int. Cl. B31b *1/14*
U.S. Cl. 156—443 **3 Claims**



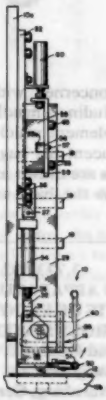
Bags of plastic film are made by cutting film along transverse lines equally spaced in a longitudinal feeding direction, folding each so-cut film piece along a transverse line, and then sealing the so-folded film piece along a longitudinal line.

3,773,597

HEATING APPARATUS

Khushroo M. Captain, Cambridge, Mass.; John H. Edwards, Warwick, R.I., and David B. Russell, Ashland, Mass., assignors to American Velcro, Inc., New York, N.Y.

Filed Aug. 10, 1971, Ser. No. 170,611
Int. Cl. B29c *19/02*
U.S. Cl. 56—499 **4 Claims**



A heating apparatus for simultaneously heating a substrate and the under surface of a path to be applied to the substrate in conjunction with means for applying the patch under pressure to a substrate.

3,773,598

APPARATUS FOR SLITTING AND ADHESIVELY JOINING PARALLEL WEBS OF MATERIAL

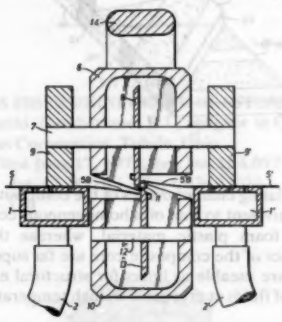
Klaus Taeffner, Cologne, and Hermann Luhrig, Leverkusen, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 28, 1971, Ser. No. 184,377

Claims priority, application Germany, Oct. 8, 1970, P 20 49 427.3

Int. Cl. B31f *5/00*; B32b *31/08*; G03d *15/04*

U.S. Cl. 156—505 8 Claims



An apparatus for fabricating and adhesively uniting parallel webs or strips of material by an edge-to-edge adhesive joint, consisting of a cutting device for providing clean cut web edges, and a joining device. The joining device consists of a lower part beneath the web and an upper part above the web, each part comprising a roll of adhesive tape and a pressure roller, both rollers being in contact along a surface line in the plane of the web, the upper part and lower part being rigidly connected to one another by a narrow bar which extends obliquely of the plane of the web and which passes through the cut in the web which is produced by the cutting device.

3,773,599

DEVICE FOR THE PREPARATORY TREATMENT OF FOIL WEBS OR STRIPS OF SYNTHETIC MATERIAL

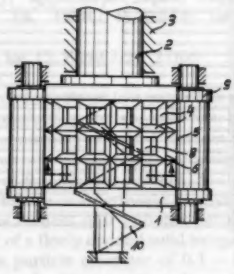
Heinrich Koch, Jakobstr. 88, Siegburg, Germany, and Heinz Staneck, Siegburg, Germany, assignors to said Koch, by said Staneck, Siegburg, Germany

Filed Mar. 4, 1971, Ser. No. 120,869

Claims priority, application Germany, Mar. 5, 1970, P 20 10 415.8

Int. Cl. B32b *31/00*; B27b *7/06*

U.S. Cl. 156—515 3 Claims



A device for the preparatory treatment of foil webs and foil strips of synthetic material in which a heated grate roller journalled unilaterally or at both ends cooperates with one or more outer pressure rollers while the grate bars or webs of the grate roller are sharp-edged at the peripheral surface of the roller and have a cross-section which increases toward the inner chamber of the grate roller and thus define free passages which toward the interior of the grate roller are of a funnel shape.

3,773,600

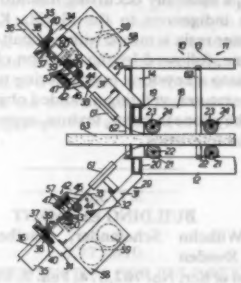
MANUFACTURE OF STRUCTURAL UNITS

Michael John Rudnev, 96 Rome St., Brisbane, Australia

Filed Mar. 14, 1972, Ser. No. 234,500

Int. Cl. B32b *31/04*

U.S. Cl. 156—551 4 Claims



Apparatus for making a laminated panel with skins of sheet material adhesively secured to a core advances the core in vertical disposition and conveys the skins to and advances them adjacently with the core; and an adhesive applicator applies adhesive to one of each pair of skin and core surfaces to be adhered before the skins meet the core, the applicator including nozzles to direct fluid adhesive onto the upper part of said surface, a plurality of flexible fingers and means for reciprocating the fingers in sequence between the upper and lower parts of said surface.

3,773,601

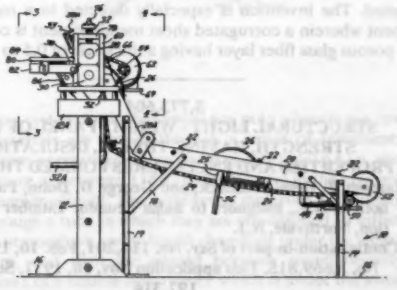
METAL DELAMINATING MACHINE

George J. Steffa, 1506-14 E. Wilt St., Philadelphia, Pa.

Filed Jan. 3, 1972, Ser. No. 214,666

Int. Cl. B32b *35/00*; B23p *19/02*

U.S. Cl. 156—584 6 Claims



A metal delaminating machine for separating the plastic bound aluminum and copper layers of an exhausted printing plate, the metal delaminating machine including upstream heating means for directing heat against the aluminum layer,

downstream heating means for directing heat against the copper layer and means to direct the plate against spreading means, such that the aluminum layer is separated from the remainder of the printing plate, while the plastic is burned away from the copper, with the aluminum and copper layers being received by individual puller roller means to produce clean aluminum and copper layers.

3,773,602

SIMULATIVE KEYSTONE

Roberta Killmer, Cocoa Beach, Fla., assignor to Meridian Decorator Accessories and Imports, Inc., Merritt Island, Fla.

Filed Feb. 8, 1971, Ser. No. 113,734

Int. Cl. B32b *27/36*; **B44f** *7/00*

U.S. Cl. 161—19 **1 Claim**

A composition and process for producing objects of simulative keystone, a naturally occurring fossiliforous coral formation which is indigenous to the Florida Keys. A water-extended polyester resin is mixed with a cobalt salt and a tertiary aromatic amine, followed by the addition of a ketone peroxide, and cast into a keystone mold. Curing takes place rapidly at room temperatures, yeilding a molded object closely resembling natural keystone in color, texture, appearance, and other superficial characteristics.

3,773,603

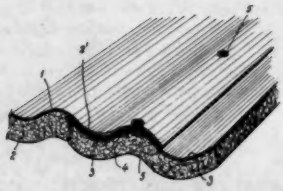
BUILDING ELEMENT

Stig Sven Wilhelm Scholander, Karlbergsvagen 68 B, Stockholm, Sweden

Continuation of Ser. No. 702,674, Feb. 2, 1968, abandoned. This application Dec. 7, 1970, Ser. No. 95,576

Int. Cl. B32b *3/02, 3/16, 3/28, 15/14, 17/02*

U.S. Cl. 161—36 **5 Claims**



A building element for roofing and walls wherein a rigid sheet material is covered on one side with a moisture retaining porous glass fiber layer having a uniform thickness of 0.4 to 1.0 mm. The building element may be either even or corrugated. The invention is especially directed to a roofing element wherein a corrugated sheet metal element is covered by a porous glass fiber layer having a thickness of 0.5 to 1.0 mm.

3,773,604

STRUCTURAL LIGHT - WEIGHT PANEL OF HIGH STRENGTH, HAVING THERAL INSULATION PROPERTIES AND ENCLOSURES FORMED THEREBY

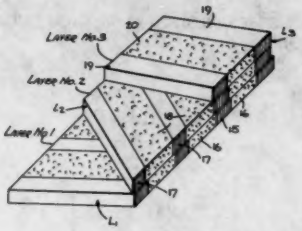
Ramesh R. Desai, Teaneck, and George D. Dohn, Park Ridge, both of N.J., assignors to Balsa Ecuador Lumber Corporation, Northvale, N.J.

Continuation-in-part of Ser. No. 114,201, Feb. 10, 1971, Pat. No. 3,669,815. This application Nov. 10, 1971, Ser. No. 197,314

Int. Cl. B32b *3/16*; **B65d** *3/22*; **B32b** *5/18*; **E04c** *2/00*; **B32b** *27/40, 5/12*

U.S. Cl. 161—37 **12 Claims**

A structural light-weight panel of high strength, having thermal insulation properties that render the panel particularly suitable for cryogenic and elevated temperature applications. The panel is constituted by a composite core bonded to a carrier membrane or laminated to facing skins, the core including at least one layer formed by a series of balsa beams in spaced relation, the spacing between the beams being filled with slabs of an insulating material such as rigid foam plastic material whose *k*-factor is similar to that of balsa, whereby the overall



thermal insulating characteristics of the composite core are effectively equivalent to that of a homogeneous core composed entirely of foam plastic material, whereas the structural characteristics of the composite core are far superior thereto. The panels are useable as liners for structural enclosures for the storage of fluids at cryogenic to high temperatures.

3,773,605

ACOUSTICAL MATERIAL

Lance W. Pihlstrom, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 5, 1971, Ser. No. 121,560

Int. Cl. D04h *1/04*

U.S. Cl. 161—43 **5 Claims**

An acoustical material as a sonar reflector or decoupler is provided by forming open porous fiber webs of filament-forming thermoplastic resin, stacking the webs to form a loose pile, and pressing the pile to produce a compacted panel of acoustical material which is easily handleable and machineable. The preferred resin is polypropylene.

3,773,606

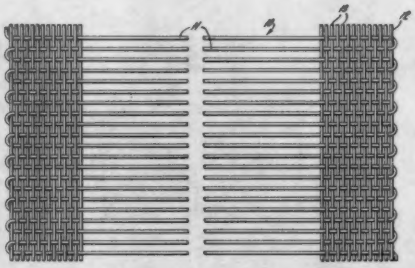
PREFORMED CROSS-LAID FABRIC

Ben C. Worcester, Jr., East Brunswick, N.J., and Doma A. Watson, Bedford, N.H., assignors to Johnson & Johnson, New Brunswick, N.J.

Filed Apr. 16, 1971, Ser. No. 134,793

Int. Cl. B32b *3/02*

U.S. Cl. 161—82 **14 Claims**



A fabric comprising from about two to eight yarns per inch running in the transverse or cross direction of the fabric and a selvage along each longitudinal edge of the fabric. Each selvage comprises from about 10 to 30 warp yarns and has a

width of from 1 inch to 3 inches. The warp yarns in the selvage being woven with the cross yarns and the warp yarns having a denier of from about 70 to 300. The fabric is made by drawing a plurality of selvage warp yarns through each side of a loom while maintaining the yarns under tension. As the warp yarns are drawn through the loom the cross yarns are woven with the warp yarns to form the selvage. As each cross yarn is woven the selvage is held in place. The selvage is released and the fabric moved forward and regripped and the next cross yarn woven, and so forth. After the cross yarns are woven to form the selvages, tension is applied to the fabric in the cross-wise direction and the fabric rolled on a driven roll.

3,773,607

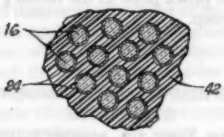
GLASS FIBER REINFORCED ELASTOMERS

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed June 17, 1971, Ser. No. 154,097

Int. Cl. B32b *17/04*; C03c *25/02*

U.S. Cl. 161—176 **19 Claims**



This invention is addressed to the improvement in the bonding relationship of glass fibers with elastomeric materials in the manufacture of glass fiber reinforced elastomeric products wherein glass fibers are individually coated, or bundles of glass fibers are impregnated, with a composition containing an improved anchoring agent in the form of a silyl amide.

3,773,608

PAPER-LIKE POLYMERIC FILMS AND PRODUCTION THEREOF

Shohei Yoshimura; Takeshi Matsui, and Takeshi Yamaguchi, all of Kozu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Mar. 15, 1971, Ser. No. 124,037

Claims priority, application Japan, Sept. 16, 1970, 45/81405; Sept. 18, 1970, 45/82074; Dec. 26, 1970, 45/125389

Int. Cl. B29d *7/24, 27/00*

U.S. Cl. 161—168 **6 Claims**

The present invention relates to a paper like polymeric film and a method of production thereof, said film being made up of a composition containing at least 5 percent by weight of a polypropylene or an ethylene/propylene copolymer having an ethylene content of 0 – 15 mol percent, 5 – 70 percent by weight of a polyethylene or an ethylene/propylene copolymer having a propylene content of 0 – 30 mol percent and 5 – 50 percent by weight of a finely divided solid inorganic substance having an average particle diameter of 0.1 – 15μ, said film having minute internal voids, a rough surface with fine irregularities in a finely fibrillated state, and being oriented in at least one direction, the void content of said film being 40 – 300 c.c./100 g. and wherein the transmittance of light rays therethrough is not higher than 70 percent.

3,773,609

PROCESS FOR PREPARING FILM OF CRYSTALLINE PROPYLENE POLYMER HAVING GOOD HEAT SEALABILITY AT LOW TEMPERATURE

Hiroshi Haruta; Masaaki Muraki; Tadao Ishibashi, and Fumihiko Mushiaki, all of Chibaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Sept. 9, 1971, Ser. No. 179,018

Claims priority, application Japan, Sept. 19, 1970, 45/82218; Dec. 25, 1970, 45/124036

Int. Cl. B29b *3/02*

U.S. Cl. 161—182 **12 Claims**

A film having a good heat sealability at a low temperature is prepared by biaxially stretching a film comprising a composition consisting of 95 to 60 percent by weight of crystalline propylene polymer and 5 to 40 percent by weight of an alicyclic resin having a softening point of 85° to 140°C and a bromine value of not more than 14, prepared by hydrogenation of an aromatic hydrocarbon resin, and then subjecting at least one side of the film to an oxidation treatment. Said composition can contain inorganic fillers such as silica, calcium carbonate, etc. and/or a bisamide, and the heat sealability at a low temperature of the thus obtained film can be maintained, and an antiblocking property is endowed to the film thereby.

3,773,610

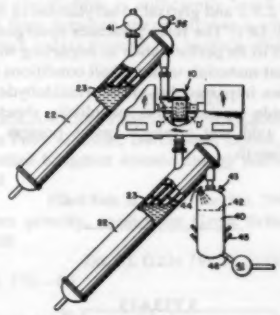
PRESSURIZED SYSTEM FOR PULP REFINING INCLUDING PRESSURIZED DOUBLE DISK TREATMENT

Joseph C. Shouvlin, and Raymond A. Leask, both of Springfield, Ohio, assignors to The Bauer Bros. Co., Springfield, Ohio

Continuation of Ser. No. 697,192, Jan. 11, 1968, abandoned. This application Dec. 11, 1970, Ser. No. 97,251

Int. Cl. B02c *7/02*; D21c *1/02, 3/26*

U.S. Cl. 162—19 **33 Claims**



A refining system for high consistency pulp wherein the raw fibrous materials are passed through a series of treatments under a steam pressurized atmosphere of 10 to 150 p.s.i.g. and a temperature of between 115°C to 200°C, and in the absence of accompanying liquid. The raw fibrous materials are initially passed through a tube in which they are conditioned by either the steam atmosphere, or by liquid chemicals under the steam atmosphere, and then are passed between simultaneously rotating disks of a double disk refiner which is under the same aforementioned steam pressurized atmosphere. Subsequent to this treatment the fibrous materials are passed to another conditioning tube, such as a digester or bleach tower, where they are further conditioned by liquid chemicals under the same steam pressurized conditions. The fibrous materials may be thereafter washed, cooled, and/or pressed.

3,773,611

TWO-STAGE SODIUM SULFITE-OXYGEN PULPING

Hans E. Worster, Richmond, British Columbia, and Marian F. Pudek, Coquitlam, British Columbia, both of Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed Apr. 12, 1971, Ser. No. 133,395The portion of the term of this patent subsequent to Sept. 12, 1989, has been disclaimed.
Int. Cl. D21c *3/00*
U.S. Cl. 162—25 9 Claims

Subjecting solftwood chips to a mild digestion with sodium sulfite alone or sodium sulfite and a small amount of sulfur dioxide or mixtures of sodium sulfite with sodium carbonate, bicarbonate or hydroxide to obtain a Kappa number of not less than about 100, defiberizing the thus treated material, and then subjecting the defiberized material to a second digestion with an alkali in the presence of oxygen to obtain a pulp of Kappa number 20–50 for bleachable pulp or Kappa number of 70–130 for linerboard grade pulp.

3,773,612

GLYOXAL-ACRYLAMIDE-FORMALDEHYDE-UREA WET STRENGTH RESIN

Robert P. Avis, West Chester, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Filed Jan. 17, 1973, Ser. No. 324,546
Int. Cl. D21h *3/38*
U.S. Cl. 162—168 9 Claims

A wet strength resin having synergistic properties consists of a polymer of glyoxal, acrylamide, formaldehyde and urea. The formaldehyde, urea, glyoxal and acrylamide are present in the following mole ratios: formaldehyde to urea, from about 1:1 to about 5:1; formaldehyde to urea and acrylamide, from about 0.25:1 to about 2.5:1 and glyoxal to acrylamide of from about 0.2:1 to about 1.14:1. The resin possesses synergistic properties with respect to its performance in imparting wet strength to cellulosic sheet materials under alkali conditions in relation to the properties imparted by urea-formaldehyde resins or glyoxal-acrylamide resins. The cellulosic sheet material produced with said wet strength resins possess good off-machine wet strength.

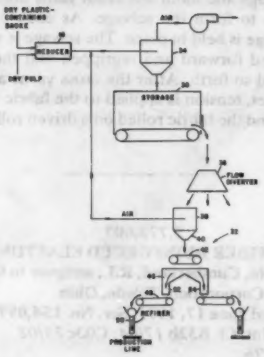
3,773,613

METHOD FOR CONVERTING PLASTIC-CONTAINING BROKE TO FLUFF

Charles A. Lee, and Frederick M. Granberg, both of Knoxville, Tenn., assignors to International Paper Company, New York, N.Y.

Filed Oct. 13, 1971, Ser. No. 188,871
Int. Cl. D21f *1/66*; D21b *1/08*; B27l *11/08*
U.S. Cl. 162—191 9 Claims

A method for converting plastic-containing, particularly filament-reinforced, cellulosic broke to a fluff of substantially separated fibers and pieces of plastic in the substantial absence of water. The dry broke material is first subjected to a pretreatment step in the absence of liquid wherein the broke pieces are rubbed against one another to free about 50 percent of the cellulosic matter as individual fibers and reduce the plastic matter to pieces having lengths of generally less than about one and one-half inches. The pretreated broke is then conveyed via storage and cyclone separator steps to a refiner treatment wherein the dry broke material is refined into a fluff containing dry cellulosic fibers and randomly distributed plastic pieces. The fluff contains less than 30 percent



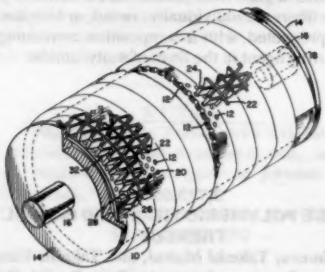
by weight plastic pieces obtained as a result of adding dry cellulosic pulp to the broke prior to the refining step or prior to the pretreatment step.

3,773,614

DRUM COMPRISING SUPPORT MOUNTED GRID STRUCTURE

Rohe V. Pennington, Rome, Ga., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Nov. 5, 1971, Ser. No. 195,953
Int. Cl. D21f *1/60*
U.S. Cl. 162—357 10 Claims



A drum comprising an annular, perforated, rigid support and an annular honeycomb or grid structure mounted circumferentially around the support. The grid structure includes planar strip means extending circumferentially of the support providing the drum with substantial circumferential rigidity; and the support provides the drum with substantial longitudinal stiffness.

3,773,615

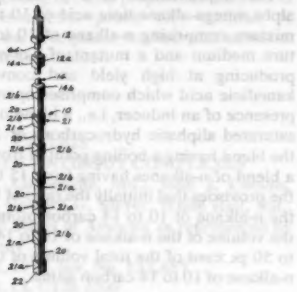
IRRADIATION SURVEILLANCE CAPSULE ASSEMBLIES FOR NUCLEAR REACTORS

Albert J. Blatter, Bloomfield, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Continuation-in-part of Ser. No. 831,078, June 6, 1969, abandoned. This application Apr. 21, 1971, Ser. No. 136,010
Int. Cl. G21g *1/00*
U.S. Cl. 176—15 8 Claims

In an improved irradiation surveillance capsule assembly for nuclear reactors, means for positioning and coupling together

a plurality of specimen compartments of the irradiation surveillance capsule assembly Each capsule assembly has, in a train-type arrangement, a series of specimen compartments having wedge-shaped end caps which mate with complementary shaped end caps on adjacent compartments. The mating end caps are coupled together for limited relative movement



so as to permit transverse off-setting of the specimen compartments upon the application of a longitudinal force whereby the movement will cause the compartments to become wedged against the sides of rectangular irradiation surveillance capsule assembly holders positioned within the reactor so as to eliminate vibration in the specimen compartment train of the capsule assembly.

3,773,616

NUCLEAR REACTOR COMPRISING A CORE COVER

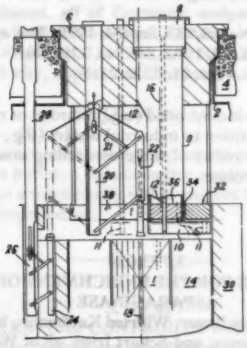
Michel Aubert, Fontenay-Aux-Roses, France, assignor to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 13, 1971, Ser. No. 188,813

Claims priority, application France, Oct. 15, 1970, 7037310

Int. Cl. G21c *19/20*

U.S. Cl. 176—30 **5 Claims**



A core cover is carried by an inner rotating shield plug which is mounted in eccentric relation to an outer rotating shield plug and is smaller in diameter than the outer plug and the reactor core. The cover forms above the core a lateral projection with respect to the inner plug. The rotation of the inner plug about its own axis is intended to free part of the reactor core so as to permit handling of fuel assemblies within the core by means of an articulated handling arm which is carried by the outer plug.

3,773,617

CONTROL-ROD ASSEMBLY FOR NUCLEAR REACTORS

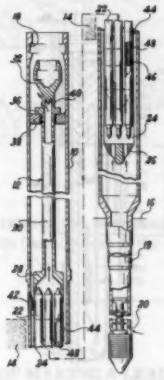
Pierre Marmonier, and Kurt Plufgrad, both of Aix-en-Provence, France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 13, 1971, Ser. No. 207,014

Claims priority, application France, Dec. 22, 1970, 7046296

Int. Cl. G21c *7/10*

U.S. Cl. 176—36 R **5 Claims**



An assembly comprising a stationary thimble and a control rod having a neutron-absorbing portion is displaceable vertically between a bottom position in which the absorbing portion is placed within the reactor core and a top position in which it is placed outside the core.

The thimble is provided both beneath and above the reactor core with apertures for the admission and discharge of coolant and with a control-rod guide bearing located above the level of the reactor core.

The clearance left by the bearing between the control rod and the thimble is sufficiently small to ensure that the coolant flow between these latter is a small fraction of the flow which passes through the neutron-absorbing portion.

3,773,618

COOLANT SYSTEMS FOR NUCLEAR REACTORS

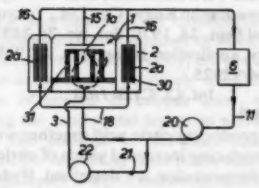
Charles Peter Gratton, Dorchester, Dorset, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 6, 1969, Ser. No. 796,989

Claims priority, application Great Britain, Feb. 7, 1968, 6,169/68

Int. Cl. G21c *19/28, 15/00*

U.S. Cl. 176—60 **4 Claims**



In some reactors the fuel can be run at temperatures above that required by the heat utilisation plant to which the coolant is supplied. In these reactors a saving in pumping power may be achieved by raising only part of the coolant to core inlet pressure and by-passing the rest around the heat emitting part of the core. The by-pass stream is mixed with the hot outlet coolant at the core outlet to give a bulk coolant at the required temperature.

3,773,619

CONTROL OF NUCLEAR REACTORS

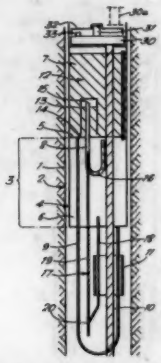
Eustace Lionel Ernest Harrington, Knutsford, and Edward Duncombe, Hale, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed May 21, 1970, Ser. No. 39,302

Claims priority, application Great Britain, May 30, 1969, 27,659/67

Int. Cl. G21c 7/22

U.S. Cl. 176—86 M 4 Claims



A control device chargeable as a unit into the core structure of a nuclear reactor comprises a reservoir and a receiver for a neutron absorbing liquid metal such as lithium 6. With the device located in the core structure of the reactor the receiver is located in the fuel zone of the core structure with the reservoir located above the receiver. A feed line for the lithium metal links the reservoir with the receiver and a flow coupler energised by flow of liquid metal reactor coolant is provided to inhibit the transfer of lithium from the reservoir to the receiver when the flow coupler is fully energised. Reduction of the degree of energisation of the flow coupler due for example to a fall in the rate of flow of liquid metal reactor coolant through the flow coupler results in transfer of lithium from the reservoir into the receiver to shut down the reactor. The flow coupler is also adapted to return the lithium from the receiver to the reservoir through a return line when energised by return to full rate of flow of liquid metal reactor coolant through the flow coupler.

3,773,620

PROCESS FOR PRODUCING CITRIC ACID ISOCITRIC ACID AND MICROBIAL CELLS BY FERMENTATION

Kazuo Kimura, and Toru Nakanishi, both of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1970, Ser. No. 75,240

Claims priority, application Japan, Oct. 9, 1969, 44/80333; Nov. 21, 1969, 44/92925

Int. Cl. C12b 1/00

U.S. Cl. 195—28 R 14 Claims

Processes for producing citric acid together with microbial cells as well as producing increased yields of citric acid and/or isocitric acid by fermentation are described. Hydrocarbon-assimilating microorganisms are employed in media containing hydrocarbons as the main carbon source. The addition of alcohols, such as C_1–C_{20} saturated alcohols, to the medium permits the accumulation of citric acid together with the obtained microbial cells. The addition of ferrocyanides, such as potassium or sodium ferrocyanide, to the medium enhances the yield of isocitric acid, while the addition of monofluoroacetic acid or a salt thereof to the medium enhances the yield of citric acid.

3,773,621

PROCESS FOR THE BIOLOGICAL PRODUCTION OF ALPHA, OMEGA-ALKANEDIOIC ACID

Robert Victor Dahlstrom, and James Herbert Jaehnig, both of Manitowoc, Wis., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1971, Ser. No. 214,380

Int. Cl. C12d 1/02

U.S. Cl. 195—28 R 7 Claims

The improvement in a process for the production of alpha,omega-alkanedioic acid of 10 to 14 carbon atoms in a mixture comprising n-alkane of 10 to 14 carbon atoms, culture medium and a mutant of Corynebacterium capable of producing at high yield and conversion alpha,omega-alkanedioic acid which comprises operating the process in the presence of an inducer, i.e., a blend of substantially branched saturated aliphatic hydrocarbons of 12 to 22 carbon atoms, the blend having a boiling point of from 150° to 255°C. and/or a blend of n-alkanes having from 15 to 24 carbon atoms with the provisoes that initially the ratio of volume of the inducer to the n-alkane of 10 to 14 carbon atoms is from 3:1 to 1:3 and the volume of the n-alkane of 10 to 14 carbon atoms is from 1 to 50 percent of the total volume of the culture medium, and n-alkane of 10 to 14 carbon atoms.

3,773,622

METHOD FOR PREPARING 2-SUBSTITUTED-4-HYDROXY-CYCLOPENTANE-1,3-DIONES

Charles J. Sih, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Sept. 29, 1972, Ser. No. 293,457

Int. Cl. C12d 13/00

U.S. Cl. 195—51 R 11 Claims

A method for preparing optically active 2-substituted-4-hydroxy-cyclopentane-1,3-diones by subjecting 2-substituted cyclopentane-1,3,4-trione or 2-substituted-3-alkoxy-2-cyclopentene-1,4-dione to the fermentative enzymatic action of microorganisms of the orders Endomycetales, Mucorales, Moliliales and Eurotiales.

3,773,623

SLIME CONTROL IN INDUSTRIAL WATERS

Herbert J. Hatcher, Bloomington; Robert J. Truda, St. Paul; Thomas G. Lechner, Lake Elmo, and Charles R. McDuff, St. Paul, all of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Division of Ser. No. 69,933, Sept. 4, 1970. This application Feb. 25, 1972, Ser. No. 229,596

Int. Cl. B32b 27/40

U.S. Cl. 195—60 3 Claims

Slime formation is controlled (e.g., retarded or removed) by the intentional addition to industrial waters (e.g., white water in pulp and paper mills) of slime controlling amounts of the enzyme levan hydrolase.

3,773,624

PROCESS FOR THE ENRICHMENT OF L-ASPARAGINASE

Otto Wagner; Klaus Bauer; Wilfried Kaufmann; Erich Rauenbusch; Alfred Arens, and Eckart Irion, all of Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 26, 1968, Ser. No. 786,901

Claims priority, application Germany, Dec. 27, 1967, P 16 42 615.6; Apr. 6, 1968, P 17 67 158.8; Apr. 6, 1968, P 17 67 157.7

Int. Cl. C07g 7/02

U.S. Cl. 195—66 A 12 Claims

Crude aqueous solutions of L-asparaginase are purified by fractional precipitation after addition thereto of an aqueous solution of a polyalkylene glycol such as polyethylene glycol,

preferably of 40 to 60 weight percent and of a molecular weight between 1,000 and 5,000, and separation of the precipitate by centrifuging. The residual solution is further precipitated and the method repeated to obtain fractions of high yield which are combined and the process repeated. In another modification, substantial improvement in the selectivity of the precipitation with polyethylene glycol is further obtained by addition of an amide, such as urea, to the L-asparaginase prior to the precipitation and purification is further increased by subjecting the thus prepurified enzyme to a precipitation at its isoelectric point, with addition of polyethylene glycol and the precipitate washed with acetone. Crystalline L-asparaginase is produced.

3,773,625

SOLUBLE ANTIGEN-ANTIBODY COMPLEXES

Ludwig A. Sternberger, Lutherville, Md.; John J. Cuculis, Fawn Grove, Pa., and Howard G. Meyer, White Hall, Md., assignors to the United States of America as represented by the Secretary of the Army

Filed Apr. 8, 1971, Ser. No. 132,457

Int. Cl. C12k *1/00*

U.S. Cl. 195—99 **10 Claims**

A composition of matter and method useful for purposes such as identification of spirochetes and electron microscopic localization of tetanus toxin in nervous tissue; the composition being prepared by forming a soluble antigenantibody complex, such as peroxidase-antiperoxidase, by the addition of a moderate antigen excess to immune precipitates and subsequent pH adjustment to 2.3. Upon neutralization, the antigen reequilibriates with the antibody into soluble complexes of homogeneous composition, and the complex is separated from free antigen by precipitation with a predetermined chemical agent, such as ammonium sulfate regarding the aforementioned peroxidase-antiperoxidase complex.

3,773,626

REAGENT COMPOSITION AND PROCESS FOR DETERMINING GAMMA-GLUTAMYLTRANSPEPTIDASE

Erich Bernt, Munich; Hans Ulrich Bergmeyer, Tutzing/Upper Bavaria; Wolfgang Gruber, Garatshausen, and Werner Lippert, Seeshaupt, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Aug. 11, 1971, Ser. No. 170,968

Claims priority, application Germany, Aug. 28, 1970, P 20 42 829.9

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **11 Claims**

A composition comprising γ-glutamyl-p-nitroaniline, glucyl-glycine, a buffer, a surface-active agent and polyvinyl-pyrrolidone is an exceptionally stable reagent for determining γ-glutamyl-transpeptidase.

3,773,627

TEMPERATURE CONTROL OF DISTILLATION

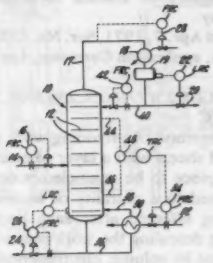
Richard Weber, and Henry A. Mosler, both of Morristown, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Dec. 13, 1971, Ser. No. 207,485

Int. Cl. B01d *3/42*

U.S. Cl. 203—2 **9 Claims**

A method and system for controlling the operation of a distillation column by adding temperatures measured at points within the column selected to accurately reflect the column's performance and using the temperature thus determined to properly adjust control variables. The proper selection of temperatures to be added allows maintenance of product qualities despite changes in feed compositions or other process disturbances. Typically, in a single feed, two product distillation column temperatures will be measured 20 percent of the distance from the top (or bottom) to the feed tray.



3,773,628

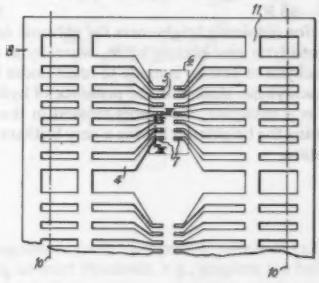
METHOD OF MAKING A LEAD ASSEMBLY

Akira Misawa; Gyoji Suzuki, both of Kanagawa-ken, and Keiichi Nakamura, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 787,111, Dec. 26, 1968, abandoned. This application May 6, 1971, Ser. No. 149,898

Int. Cl. C23b *5/48, 3/04*; C23f *1/02*

U.S. Cl. 204—15 **5 Claims**



In making a lead assembly, for example for connection to integrated circuit or semi-conductor devices, layers of a lead metal, such as, nickel or nickel alloy, are provided on selected areas of both surfaces of a relatively thick base metal sheet, for example, of copper or copper alloy, which is etched through using the lead metal layers as a mask for precisely determining the portions of the base metal sheet to be removed, with the remaining parts of the base metal sheet and the lead metal layers integral therewith defining the assembly of leads which are joined by an outer frame to be severed from the leads after the connection of the latter to electrodes of integrated circuits or semi-conductor devices. The lead metal layers on one surface of the base metal plate may extend beyond the lead metal layers on the other plate surface so that, upon etching through the base metal plate from both surfaces thereof, the lead metal layers on said one surface of the base metal plate project beyond the remaining parts of the latter to constitute tips of the corresponding leads.

3,773,629

METHOD OF ENAMELING STRIPS AND SHEETS OF STEEL

Werner Sieckmann, Dortmund-Aplerbeck; Klaus Jurging, Remscheid, and Jan Zwach, Wuppertal-Oberbarmen, all of Germany, assignors to Hoesch Aktiengesellschaft, Dortmund, Germany

Filed Apr. 7, 1971, Ser. No. 132,195

Claims priority, application Germany, Apr. 9, 1970, P 20 16 989.5

Int. Cl. C23f *17/00*; C23b *5/08, 5/30*

U.S. Cl. 204—38 C 14 Claims

A multi-stage method of providing work pieces, especially bands, strips, and sheets with a layer of enamel, according to which the work piece to be enameled is degreased and subsequently subjected to a plurality of treatment steps with a rinsing step being effected after each treatment step, said method including descaling the work piece in a nitric acid of from 3 to 8 percent by volume, electrodepositing from at least one electrolyte bath within a temperature range of from room temperature to 80°C upon the thus treated work piece a metallic layer containing iron and at least one of the metals, nickel, cobalt and manganese, in which at least one of the metals nickel, cobalt and manganese up to a total concentration of from 50 grams per liter of these foreign metals, post-treating the work piece in an acid within a time period of from 10 to 20 seconds, and subsequently enameling the work piece.

3,773,630

ZINC ELECTROPLATING BATHS

Francine Popescu, 8-10, rue Manin, Paris, 19eme, France

Filed Jan. 8, 1971, Ser. No. 105,119

Claims priority, application France, Dec. 3, 1970, 7043547

Int. Cl. C23b *5/10, 5/46, 5/12*

U.S. Cl. 204—55 R 10 Claims

A process for obtaining brighteners for galvanic baths, particularly electrolytic zinc-plating baths, whereby at least one aromatic aldehyde or ketone is made to react under heat with at least one acetylenic alcohol in the presence of hydrochloric acid acting as a catalyzer, the pieces treated in the galvanic bath comprising the brightener having a very brilliant and ductile surface state.

3,773,631

AQUEOUS ELECTROLYTIC BATH FOR COLORING ANODIC OXIDE LAYERS ON ALUMINUM AND ALUMINUM ALLOY SUBSTRATES AND PROCESS FOR COLORING SAID SUBSTRATES

Waldemar Immel, Solingen; Lorenz Laser, Langenfeld, and Werner Adams, Solingen, all of Germany, assignors to Friedr. Blasberg GmbH & Co. KG., Solingen-Merscheid, Germany

Filed Oct. 14, 1971, Ser. No. 189,386

Claims priority, application Germany, Oct. 16, 1970, P 20 50 870.7

Int. Cl. C23b *9/02*; C23f *5/02*

U.S. Cl. 204—58 8 Claims

Coloring aqueous electrolytic baths containing aliphatic aminocarboxylic acids and/or salts thereof in addition to coloring metal salt compounds are used to color anodic oxide layers on aluminum and aluminum alloy substrates by alternating current treatment in said aqueous electrolytic baths.

3,773,632

ELECTROCHEMICAL PRODUCTION OF TRANSITION METAL ORGANOMETALLIC COMPLEXES

Herbert Lehmkuhl, Mulheim/Ruhr, Germany, assignor to Studiengesellschaft Kohle mbH, Mulheim, Germany

Filed Feb. 11, 9171, Ser. No. 114,723

Claims priority, application Germany, Feb. 17, 1970, P 20 07 076.2

Int. Cl. C07b *29/06*; C07f *13/00*; C07l *15/00*

U.S. Cl. 204—59 QM 13 Claims

Organometallic complexes of transition metals, free of carbon monoxid are produced electrochemically by electrolysis in a cell having two metal electrodes and electrolyte solution comprising an organic solvent, a suitable complexing agent and, optionally, a conducting salt. The transition metal compounds involved comprise those of Groups IVb to VIIb and VIII and they may be used in metallic form as the anode. The cathode is advantageously a metal toward which the electrolyte is inert, e.g. aluminum. The complexing agent preferably comprises a compound of a transition metal of Group IVb, VIb or VIII, e.g. an acetylacetonate, organic acid salt or alkanolate of titanium, chromium, iron, cobalt or nickel. Quaternary ammonium or alkali metal salts may be used as conductors.

The products are suited for catalysis of hydrogenation, oligomerization and isomerization.

3,773,633

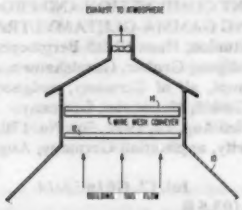
PROCESS FOR RECOVERING GASEOUS HF FROM GASEOUS EFFLUENTS

Aaron J. Teller, Great Neck, N.Y., assignor to Wellman-Lord, Inc., Lakeland, Fla.

Continuation-in-part of Ser. No. 757,556, Sept. 5, 1968, abandoned. This application Mar. 13, 1970, Ser. No. 19,381

Int. Cl. C22d *3/12*; C01d *7/22*

U.S. Cl. 204—67 23 Claims



Hydrogen fluoride is recovered from gases by contacting the gases with alumina pretreated with NaOH, KOH or their mixture.

3,773,634

CONTROL OF AN OLYTE-CATHOLYTE CONCENTRATIONS IN MEMBRANE CELLS

Alan J. Stacey, Garfield Heights, and Ronald L. Dotson, Mentor, both of Ohio, assignors to Diamond Shamrock Corporation, Cleveland, Ohio

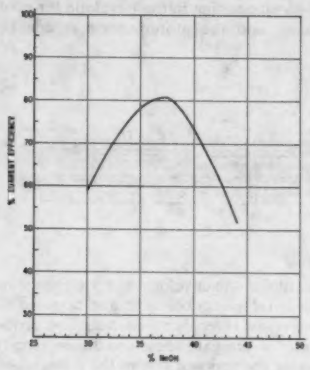
Filed Mar. 9, 1972, Ser. No. 233,129

Int. Cl. B01d *13/02*; C01d *1/06*

U.S. Cl. 204—98 2 Claims

The electrolysis of aqueous sodium chloride in an electrolytic cell divided into anolyte and catholyte compartments by a hydraulically impervious cation-permselective membrane is improved, especially with respect to current efficiency, by operation at a sodium hydroxide concentration within the catholyte in the range of 31–43 percent, controlled by the

maintenance of an average sodium chloride concentration in the anolyte within the range of 120–250 grams per liter, the only source of water to the catholyte compartment being that transported through the membrane.



3,773,635

PROCESSING OF MANGANESE NODULES FROM THE OCEAN FLOOR FOR METAL VALUES

William S. Kane, Wicomico, and Paul H. Cardwell, Zanoni, both of Va., assignors to Deepsea Ventures, Inc., Gloucester Point, Va.

Continuation-in-part of Ser. No. 40,587, May 26, 1970. This application Sept. 29, 1971, Ser. No. 184,771

Int. Cl. C22d *1/24, 1/16, 1/14*

U.S. Cl. 204—105 M 14 Claims

Method for recovering metal values from ocean floor nodules of the type containing iron, manganese, copper, cobalt, and nickel comprising grinding the nodules into particles, chlorinating to obtain vaporized metal chlorides and oxides of carbon or water as reaction products, condensing the metal chloride reaction products, converting the iron chloride to iron oxide while leaching the remaining reaction products with water, separating the metal chlorides by liquid ion exchange, and recovering metal values by electrolyzing. The process is distinguished in its capability of condensing the metal chloride products in fractions.

3,773,636

METHOD FOR THE CONTROL OF THE PASSAGE OF THE WORKING MEDIUM FOR ELECTRIC WORKING PROCESSES AND ARRANGEMENT FOR EXECUTING THIS METHOD

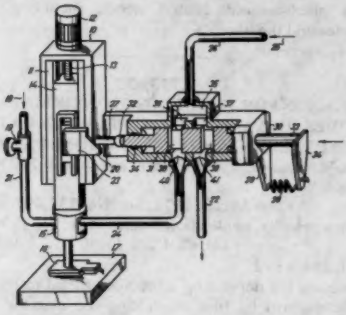
Jan Augustin, Podolie, Czechoslovakia, assignor to Vyskumny ustav mechanizacie a automatizacie, Vahom, Czechoslovakia

Filed Oct. 29, 1971, Ser. No. 193,848

Int. Cl. B23p *1/00, 1/02*

U.S. Cl. 204—129.25 2 Claims

The controlled passage of an unstable mixture of a working medium through the working gap in electric working processes and which passage is controlled by dependence on the relative position of tool and workpiece according to a predetermined program in order to change the conductivity of the working medium and apparatus for carrying out the same.



3,773,637

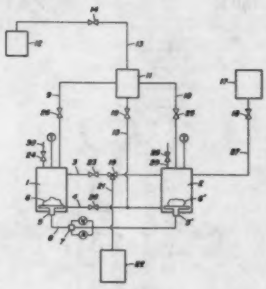
METHOD OF DISSOLUTION OF METALS USING THERMOGALVANIC CELLS

Edward F. Decrosta, 7 James St., Hudson, N.Y.

Division of Ser. No. 607,241, Jan. 4, 1967, Pat. No. 3,537,972. This application Nov. 2, 1970, Ser. No. 86,318

Int. Cl. B01k *1/00, 3/03*

U.S. Cl. 204—146 8 Claims



Thermogalvanic cells comprising two half cell units each containing an inert electrode, e.g., graphite the half cells being connected at their upper and lower portions by conduit means; cell adapted to dissolution of metals, e.g. stainless steel — in operation, electrode and metal to be treated charged to each half cell and heat applied to first half cell, continuous convection circulation of electrolyte as dissolution occurs.

3,773,638

PROCESS FOR THE RADIATION CURING OF UNSATURATED POLYESTER RESINS IN THE PRESENCE OF SULFUR-VULCANIZED ELASTOMER

Kazuo Gotoh; Kunio Araki, and Takashi Sasaki, all of Takasaki, Japan, assignors to Japan Atomic Energy Research Institute, Tokyo, Japan

Filed June 15, 1971, Ser. No. 153,397

Claims priority, application Japan, June 18, 1970, 45/53095

Int. Cl. B01j *1/10;* C08d *1/00;* C08f *1/16*

U.S. Cl. 204—159.19 6 Claims

This invention relates to a method of curing unsaturated polyester resins in contact with elastomers by polymerization employing ionizing radiation.

This invention, which overcomes all drawbacks in the prior art whereby unsaturated polyester resins under the afore-mentioned condition could not be cured, only remaining in gel form, can be widely used for various kinds of fiber glass reinforced plastics and coated goods including decorative laminates and the like.

3,773,639

PROCESS FOR THE DEPOSITION OF METALS OR OXIDES ON A METALLIC SUPPORT BY CATHODIC SPUTTERING AND APPLICATIONS THEREOF

Robert M. Masotti, Lyon, France, assignor to PROGIL, Paris, France

Filed Apr. 5, 1971, Ser. No. 131,497
Claims priority, application France, Apr. 21, 1970, 7014327
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **8 Claims**

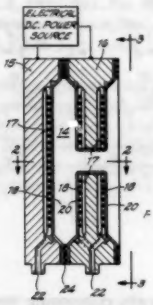
A process for depositing a precious metal or its oxide on a metallic support by first submitting the metallic support to ionic bombardment in a rare gas atmosphere, then without cooling below 300°C. depositing the precious metal by cathodic sputtering conducted first in a rare gas atmosphere and then in an atmosphere of mixed oxygen and rare gas.

3,773,640

METHOD FOR TREATING WET PROCESS CERAMIC BODIES

Lawrence M. Burrage, South Milwaukee, and Darrel D. McStrack, New Berlin, both of Wis., assignors to McGraw-Edison Company, Milwaukee, Wis.

Division of Ser. No. 852,399, Aug. 22, 1969, abandoned. This application Feb. 28, 1972, Ser. No. 230,069
Int. Cl. B01d *13/02*; B01h *5/00*
U.S. Cl. 204—180 R **15 Claims**



A method for processing ceramic slip into a filter cake suitable for further processing into electrical insulating bodies applies a D. C. power source across the press plates of a filter press during a portion of the pressing process. After a selected period of time the polarity of the source is reversed for a selected period.

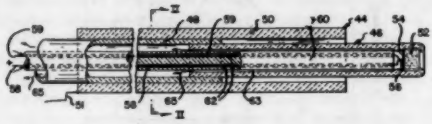
3,773,641

MEANS FOR DETERMINING THE OXYGEN CONTENT OF LIQUID METALS

George R. Fitterer, 825 Twelfth St., Oakmont, Pa.

Continuation-in-part of Ser. No. 786,866, Dec. 23, 1968, Pat. No. 3,619,381, which is a continuation-in-part of Ser. No. 570,855, Aug. 8, 1966, abandoned. This application Apr. 30, 1971, Ser. No. 138,985
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 S **19 Claims**

A probe capable of being plunged into a high temperature liquid metal without destructive thermal shock for determining the dissolved oxygen content of the liquid metal comprises an elongated electrically insulating refractory envelope and a small mass of refractory oxide-type oxygen-anion permeable solid electrolyte material supported adjacent one end of the envelope. At least a portion of at least one side of the mass is exposed through an opening in the envelope for contact with the liquid metal, and the aforementioned side portion is



disposed adjacent the one envelope end. Reference means are provided in the envelope for contacting an apposed side of the mass with an oxygen reference material. The probe is provided with circuit means extending into the envelope for electrically contacting the apposed side of the mass, together with additional circuit means disposed for electrically contacting the liquid metal for measuring an emf developed across the mass in proportion to the aforesaid dissolved oxygen content.

3,773,642

ELECTRON-CONDUCTIVE GLASS

Boris Petrovich Nikolsky, 2 Murinsky prospekt, 44, kv. 92; Mikhail Mikhailovich Shults, Novocherkassky prospekt, 66, kv. 39; Alexandr Moiseevich Pisarevsky, Kronverxaya, 29, kv. 109; Anatoly Alexandrovich Beljustin, ulitsa Sojuza Pechatnikov, 25-a, kv. 39; Sofia Konstantinovna Bolkhontseva, ulitsa Dekabristov, 16, kv. 19, all of Leningrad; Vladimir Alexandrovich Dolidze, prospekt Rustaveli 1, kv. 68, Tbilisi; Valentina Mikhailovna Tarasova, prospekt Plekhanova, 148, kv. 19, Tbilisi; Julia Mikhailovna Karachentseva, Tovarny poselok, 6 ulitsa, 28, kv. 4, Tbilisi, and Liana Iosifovna Dolmazova, Kakhetinskoe shosse, 21, kv. 21, Tbilisi, all of U.S.S.R.

Filed July 13, 1971, Ser. No. 162,245
Int. Cl. G01n *27/36*
U.S. Cl. 204—195 G **4 Claims**

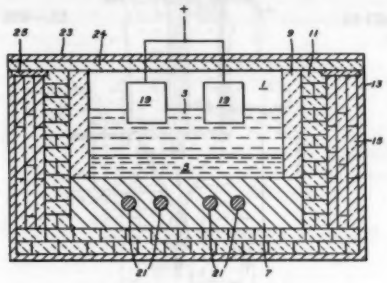
An electron-conductive glass having the following composition, percent by weight: SiO_2, 45–65; Fe_2O_3, 25–50; Na_2O, 4–15, and Li_2O, 2–10. The glass of said composition is used for making the sensitive element of a glass electrode intended for oxidation potential measurements in liquid media. A high percentage of ferric oxide provides for significant exchange currents at the glass-test solution boundary, whereas the alkali metal oxides suppress the ionic conductivity.

3,773,643

FURNACE STRUCTURE

Allen S. Russell, New Kensington, Pa., and Lester L. Knapp, Maryville, Tenn., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sept. 16, 1971, Ser. No. 181,116
Int. Cl. C22d 3/02, 3/12
U.S. Cl. 204—243 R 2 Claims



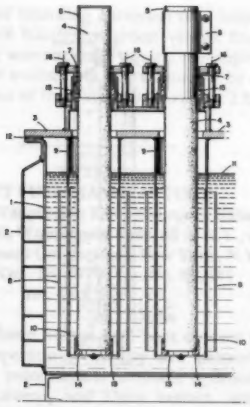
Furnace having a chamber for holding molten salt, such as alkali metal chloride and alkaline earth metal chloride, in which contact of the molten salts with a perimetric shell around that chamber is prevented by a glass barrier between that shell and the aforesaid chamber.

3,773,644

ELECTROLYTIC CELL FOR THE PRODUCTION OF FLUORINE

Antonio Tricoli, Milan; Alberto Battarra, Alessandria; Giovanni Rebua, Milan, and Luigi Bestetti, Monza, all of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed June 1, 1971, Ser. No. 148,831
Claims priority, application Italy, June 1, 1970, 25390 A/70
Int. Cl. B01k 3/10
U.S. Cl. 204—252 3 Claims



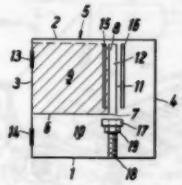
An improved electrolytic cell for the production of fluorine is disclosed which is characterized by being provided with carbon anodes protruding from the cell, each anode having its section protruding from the cell covered by a gasproof coat made of a good conducting material through which the electrical connection for the current to the anode is assured. The coat may consist of a cap coupled by forcing on to the anode and thus snugly fitting over and upon the end of the anode. The anodes are supported by the cell cover through a stuffing box arrangement and are substantially round in cross-section. A cathode associated with each anode coaxially with respect thereto consists of a substantially cylindrical pipe, with provision for a diaphragm consisting of a substantially cylindrical pipe, coaxial with the anode, and disposed between the anode and the cathode.

3,773,645

ELECTROPHORESIS DEVICE

Stephan Hubertus Anton Nees, and Wilhelm Schmidt, both of Erlangen, Germany, assignors to Colora Messtechnik GmbH, Lorch/Wurtt., Germany

Filed Nov. 12, 1971, Ser. No. 198,130
Claims priority, application Germany, Nov. 14, 1970, P 20 56 129.9; Nov. 14, 1970, P 20 56 128.8; Nov. 14, 1970, P 20 56 127.7
Int. Cl. B01k 5/00
U.S. Cl. 204—299 36 Claims



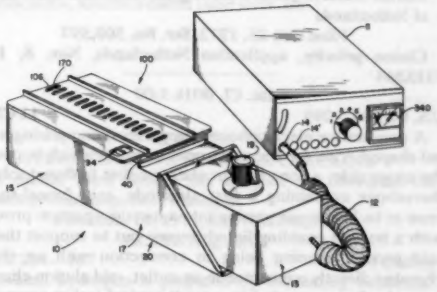
An electrophoresis device having a separating chamber, and two buffer containers one of which is attached to one end of said separating chamber and the other one is connected to the other end, and an electrode in each in said buffer containers, said device essentially having a box-shaped housing and a box area which is divided up into two partial areas serving as buffer containers by means of an essentially horizontal intermediate bottom of lesser depth than the box together with an intermediate wall which extends essentially vertically from the intermediate bottom.

3,773,646

ELECTROPHORESIS TEST KITS

Richard Max Mandle, Pompton Lakes, N.J., and Howard Edward Bond, Montgomery County, Md., assignors to Electro-Nucleonics Laboratories, Inc., Bethesda, Md.

Filed May 12, 1972, Ser. No. 252,639
Int. Cl. B01k 5/00
U.S. Cl. 204—299 68 Claims



An integral gel bridge and legs and wells test kit unit is provided, the unit being adapted for use with a low voltage elec-

trophoretic testing system. Improvements in the construction of the test kit unit and various specific embodiments thereof for use in specific tests are provided. Also provided are methods of producing such test kit units incorporating means for prevention of syneresis of the gel components and also incorporating means to increase the rate of accuracy of reproducibility of test kits and test results.

3,773,647

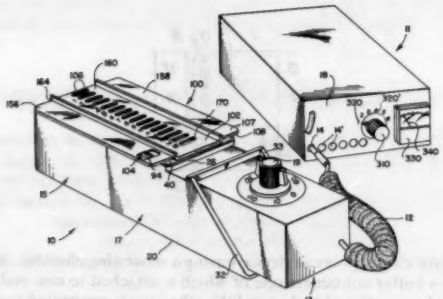
LOW VOLTAGE ELECTROPHORETIC TESTING SYSTEM

Richard Max Mandle, Pompton Lake, and Frank Karsai, Dover, both of N.J., assignors to Electro-Nucleonics Laboratories, Inc., Bethesda, Md.

Filed May 12, 1972, Ser. No. 252,817

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **39 Claims**



A low voltage electrophoretic testing system is provided incorporating the various individual components thereof, the system being adapted especially for use with the electrophoresis test kit units, including the various modifications thereof, disclosed and claimed in our copending application, filed even date herewith and entitled "Electrophoresis Test Kits and Method of Making the Same."

3,773,648

ELECTROPHORESIS APPARATUS

Henk Van Welzen, 5 Koningin Emmalaan, Den Hoorn, and Marius Hendrik Johan Zuidweg, Rietveldsetoorn, Delft, both of Netherlands

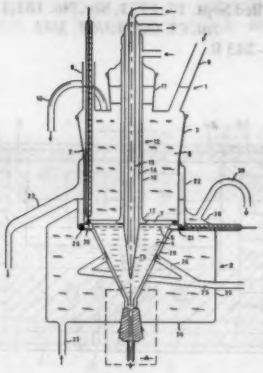
Filed Oct. 25, 1972, Ser. No. 300,597

Claims priority, application Netherlands, Nov. 8, 1971, 7115364

Int. Cl. B01k *5/00*

U.S. Cl. 204—299 **12 Claims**

A preparative electrophoresis apparatus, comprising a funnel-shaped zone for the electrophoresis gel which is open at the upper side, a zone for circulating a first buffered solution thereabove containing a first electrode, said funnel-shaped zone at its lower end passing into a narrow aperture provided with a bottom enabling liquid to pass but to support the gel, said narrow opening being in connection with an elution chamber directly connected to an outlet, said elution chamber being further connected to a small conical jacket around the funnel-shaped zone, said conical jacket being connected with a zone containing a second electrode and being provided with an inlet for circulating a second buffered solution, said inlet being situated between the zone containing the second electrode and the elution chamber, said elution chamber further being provided with a downwardly directed outlet for the eluate, the apparatus further comprising means for cooling the liquids and the gel, this apparatus permitting a high separation force.



3,773,649

BITUMEN BLASTING PROCESS AND BLAST REACTOR THEREFOR

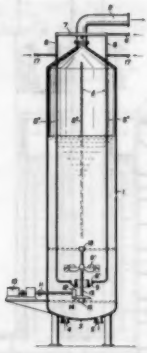
Hans Senolt; Heinrich Tomaschko, and Georg Palvik, all of Vienna, Austria, assignors to Osterreichische Mineralolverwaltung Aktiengesellschaft, Vienna, Austria

Filed July 23, 1969, Ser. No. 843,970

Claims priority, application Austria, July 25, 1968, A 7210/68

Int. Cl. C10g *27/00*

U.S. Cl. 208—6 **4 Claims**



The undesirable and damaging reaction heat occurring during the blowing of asphalt is avoided by injecting water into the air inlet pipes of the reactor vessel heated by the hot asphalt surrounding them. During this, the superheated steam produced without expenditure is passed through the liquid asphalt, causing the removal of low molecular hydrocarbons formed during the blowing or stripping.

3,773,650

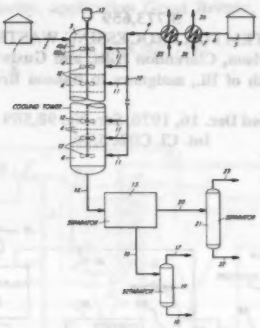
DEWAXING PROCESS

Donald B. Hislop, and John F. Eagen, both of Sarnia, Ontario, Canada, assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 17,869, March 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 666,268, Sept. 8, 1967, abandoned. This application Mar. 31, 1971, Ser. No. 129,973

Int. Cl. C10g *43/08*

U.S. Cl. 208—33 23 Claims



An improved process for the solvent dewaxing of petroleum oil stocks. The dewaxing solvent is prechilled and added incrementally or continuously at several points along the height of a cooling tower. The oil-solvent mixture is agitated during the chilling step to permit substantially instantaneous mixing of the prechilled solvent with the oil.

3,773,651

CRUDE OIL HEAT EXCHANGE

Russell F. Stedman, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 24, 1972, Ser. No. 220,455

Int. Cl. C10g *9/12, 9/16*

U.S. Cl. 208—47 6 Claims

In the method of retarding corrosion of a heat exchanger being used to cool hot hydrocarbon vapors from a crude column by adding water to said vapors, the improvement to reduce loss of heat available in said exchanger by adding said water only for a time of from about 0.5 to about 2 hours within a 24 hour period.

3,773,652

JET FUEL MANUFACTURE

Kenneth L. Dille, Wappingers Falls; George S. Saines, Fishkill, and Alfred Arkell, Wappingers Falls, all of N.Y., assignors to Texaco Development Corporation, New York, N.Y.

Filed Oct. 13, 1970, Ser. No. 80,481

Int. Cl. C07c *5/10*

U.S. Cl. 208—49 3 Claims

Jet fuels which have both a high heat content and an acceptable low temperature viscosity are prepared by the hydroalkylation of mononuclear aromatic hydrocarbon fractions. Benzene, toluene, and Udex extract, and mixtures thereof, are the preferred starting materials. These are hydroalkylated by reaction at about 30°–250° C. under superatmospheric pressures of about 20–70 atmospheres of hydrogen, thus producing hydroalkylates containing cycloalkyl-substituted benzenes, methylcyclohexyl-substituted toluenes and the like. These are further reduced to the corresponding cycloalkyl-substituted cyclohexanes, together with methylcyclohexyl methylcyclohexanes and methylcyclohexane when toluene is used, and the reduction products are adjusted to a final desired heat content and low temperature viscosity by stripping off or adding methylcyclohexane. The preferred catalyst is finely divided nickel on a support containing both a zeolite and a silica-alumina cracking catalyst.

3,773,653

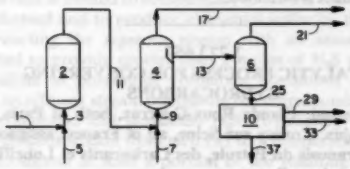
PRODUCTION OF COKER FEEDSTOCKS

Govanon Nongbri, Trenton; Seymour B. Alpert, Princeton, and Ronald H. Wolk, Lawrence Twp., Mercer County, all of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Mar. 15, 1971, Ser. No. 124,059

Int. Cl. C10b *55/00;* C10g *23/02*

U.S. Cl. 208—50 3 Claims



Coker feedstocks having minimum amounts of sulfur or metals are produced from residuum feeds using an ebullated bed reaction zone. The qualities of the coker feedstocks are controlled through the use of selected operating conditions within the limits of converting 30 to 60 percent of the material in the feed boiling above 975° F to lighter boiling products.

3,773,654

HYDROTREATING OF HYDROCARBONS

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 827,181, May 23, 1969, abandoned, which is a continuation-in-part of Ser. No. 807,910, March 14, 1969. This application June 24, 1971, Ser. No. 156,473

Int. Cl. C10g *23/04*

U.S. Cl. 208—57 1 Claim

A process for hydrotreating hydrocarbons and mixtures of hydrocarbons utilizing a catalytic composite of a porous carrier material, a Group VIII noble metal component and a tin component. Applicable to charge stocks containing sulfurous compounds and aromatic hydrocarbons, the operating conditions can be controlled to effect a particular end result including the ring-opening of cyclic hydrocarbons, desulfurization, denitrification, selective olefin saturation, etc.

3,773,655

HYDROGENATIVE THERMAL CRACKING

Frank Stolfa, Park Ridge, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 14, 1971, Ser. No. 106,516

Int. Cl. C10g *13/02*

U.S. Cl. 208—107 4 Claims

Activated hydrogen is prepared by contacting molecular hydrogen with a metal phthalocyanine catalyst. A heavy hydrocarbonaceous charge stock is then reacted with the activated hydrogen at hydrogenative thermal cracking conditions including a maximum temperature in the range of 500° F. to about 800° F.

3,773,656

PROCESS FOR HYDROCARBON CRACKING USING A TUNGSTEN-RHENIUM CATALYST

Billy Duane Head, Angleton, and George Robert Martin, Freeport, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 1, 1971, Ser. No. 203,832
Int. Cl. C10g 13/06
U.S. Cl. 208—111 7 Claims

Heavy hydrocarbon feed oils such as heavy gas oils, residium, topped crude oils and the like are hydrocracked by mixing hydrogen with the feed oil in the ratio of hydrogen to feed oil in the range from 4000 to 10,000 SCF of hydrogen per barrel of feed oil and contacting this mixture under hydro-treating conditions with a supported micro-spherical catalyst having 5–20 weight per cent tungsten and 0.5 to 5.0 weight per cent rhenium. Increased isoparaffin and aromatic content in the cracked product is obtained.

3,773,657

CATALYTIC PROCESS FOR CONVERTING HYDROCARBONS

Christian Lassau; Claude Roux-Guerraz, both of Paris, and Lucien Sajus, Croissy sur Seine, all of France, assignors to Institut Francois du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Filed Oct. 27, 1970, Ser. No. 84,496
Claims priority, application France, Nov. 5, 1969, 6938132
Int. Cl. C10g 11/02
U.S. Cl. 208—124 22 Claims

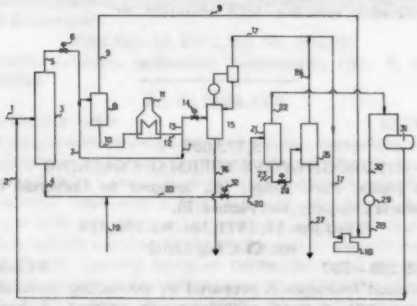
For converting hydrocarbons, particularly by cracking and dehydrogenation, react hydrocarbons at 225°–800°C, particularly 300°–600°C, in contact with a soluble catalyst in liquid phase, said catalyst comprising a compound of a metal of group Ib, IIb, IVa, Va, VIa, VIIa or VIII and a reducing agent, particularly one of formula $Al\ H_n\ X_{3-n}$ with n = 1 or 2, X = OR, NR_2, NHR or SR, R being a monovalent organic radical, or one of formula Me $[Al\ H_mX'_{4-m}]_p$ wherein m is 1, 2 or 3, p is the valence of Me,i.e., of a metal of group Ia or IIa, and X' is R, OR, NR_2, NHR or SR.

3,773,658

PROCESS FOR REGENERATING USED LUBRICATING OILS

Quang Dang Vu, Paris; Francois Audibert, Lyon; Jean Francois Boucher, Saint Germain en Laye, and Henri DeVille, La Celle Saint Cloud, all of France, assignors to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed June 4, 1971, Ser. No. 150,139
Claims priority, application France, June 8, 1970, 7021053
Int. Cl. C10g 27/100
U.S. Cl. 208—180 11 Claims



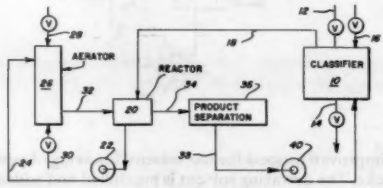
A process for regenerating used oils comprising contacting the same with a light paraffinic hydrocarbon as solvent, separating from the resulting mixture a solution of clarified oil and a residue, separating a substantial portion of the solvent from the clarified oil in a first flash zone, separating substantially the rest of the solvent from the clarified oil in a second flash zone, admixing with the residue a viscosity lowering agent, separating a substantial portion of the solvent vapors from the resulting mixture in a third flash zone and further separating substantially the rest of the solvent vapors from said residue in a fourth flash zone, condensing the solvent vapors from the first, second and fourth zones and admixing the resulting condensate with the solvent vapors from the third zone.

3,773,659

SYSTEM FOR PROCESSING WASTES

Lee Gerald Carlson, Clarendon Hills, and Gustav A. Ronsen, Wheaton, both of Ill., assignors to Babson Bros. Co., Oak Brook, Ill.

Filed Dec. 16, 1970, Ser. No. 98,589
Int. Cl. C02c 5/06
U.S. Cl. 210—7 30 Claims



The present invention provides a system for biodegrading manure or similar waste products from animal subjects such as human beings, cows, steers, swine, chickens or other domestic animals. The manure is introduced as mixed solid and liquid waste into a holding tank and water is added as needed. The liquid manure portion is withdrawn from the holding tank and delivered downwardly through a multilevel perforated horizontal plate aerator tower in combination with air or other oxygen containing gas so as to practically fill the tower with bubbles between the horizontally disposed plates. Liquid flowing from the bottom of the tower contains a substantial amount of foam and the liquid-foam mixture is delivered to a reaction vessel. Most of the liquid is recycled from the reaction vessel at a high flow rate back to the top of the tower providing a flowing cyclic stream. Liquid manure from the holding tank can be introduced into the cyclic stream at any point, e. g., into the top of the tower or into the reaction vessel. Solid grass and the like can be recovered as a separate product from the holding tank.

A second stream of liquid, very low volume and low flow rate compared to the tower recycle stream, is delivered from the reaction vessel through an enzyme or settling vessel in which an enzyme producing culture provides further biodegradation. Product water is recovered from the enzyme vessel and can be deflocced, coagulated and further purified, such as by means of an ion exchange system, filtering or the like, even to the extent that it becomes potable water. A slip stream can also be withdrawn from the enzyme vessel and used to prewash product solids such as undigested grass, corn, etc., recovered from the holding tank and/or for recycling to the holding tank as an inoculum. Effluent from the settling vessel is used for secondary washing of the product solids. The liquid effluent returns to the agitating vessel.

The floc recovered from the defloccing step apparently contains all of the phosphates from the manure and is useful as a fertilizer. Any grassy residue from the holding tank, e. g., as would be recovered from cow manure or the like, can be washed and used either as feed or bedding. In use, the system forms a portion of a partial life cycle in that feed or bedding

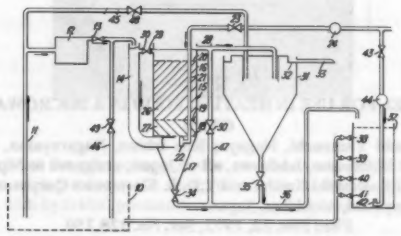
recovered from the system can be used to resupply the animals which produced the manure and fertilizer from the floc component can be used to fertilize grazing lands. Useful gases, e. g., ammonia and carbon dioxide, can also be recovered from the system.

3,773,660

METHOD AND APPARATUS FOR TREATING EFFLUENT

Adrian Patrick Hopwood, Chelmsford, England, assignor to Mono Pumps (Engineering) Limited, Clerkenwell Green, London, England

Filed Oct. 5, 1971, Ser. No. 186,780
Claims priority, application Great Britain, Oct. 13, 1970, 48,665/70
Int. Cl. C02c *1/04*
U.S. Cl. 210—8 17 Claims



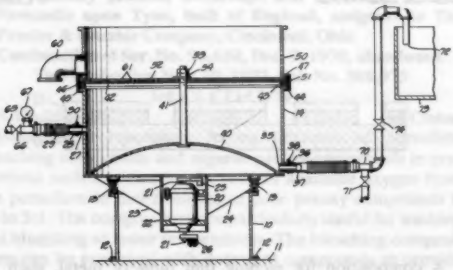
A method of and apparatus for treating raw effluent such as sewage by passing the effluent through a vessel containing submerged media and passing air through the effluent and media. The effluent and air are preferably passed upwards through the vessel. The media are suitably short lengths of plastics tubing. A two stage process is possible, the effluent being passed through two such vessels. Settlement tanks for the so treated effluent are provided.

3,773,661

VIBRATORY SEPARATOR FOR CONCENTRATING A SOLIDS CONTAINING LIQUID

Walter J. Talley, Brentwood Park, Calif., assignor to Sweco, Inc., Los Angeles, Calif.

Filed July 23, 1971, Ser. No. 165,630
Int. Cl. B01d *29/04, 29/28*
U.S. Cl. 210—19 9 Claims



There is disclosed herein a vibratory separator for concentrating a solids-containing liquid stream. The separator utilizes a lower chamber which is caused to vibrate by a source of vibratory energy. The stream to be concentrated is fed into the lower chamber which is closed at its bottom and covered at the top by a screen. A portion of the liquid passes upwardly through the screen and the solids which are too large to pass through the screen remain below in the lower chamber. A relatively solids-free stream is removed from above the screen and a concentrate stream is removed from the lower chamber.

3,773,662

TREATMENT OF A THIOSULFATE SOLUTION WITH HYDROGEN SULFIDE

Peter Urban, Northbrook, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 16, 1972, Ser. No. 263,509
Int. Cl. C02c *5/04*
U.S. Cl. 210—50 12 Claims

An aqueous stream containing a water-soluble thiosulfate compound is treated to substantially lower the thiosulfate content thereof and to produce elemental sulfur by the steps of: (a) reacting the aqueous stream with an amount of H_2S selected to provide greater than 2 moles of H_2S per mole of thiosulfate at polysulfide formation conditions selected to form an effluent stream containing the corresponding polysulfide compound and unreacted H_2S; (b) rapidly cooling the total effluent stream from step (a) to a temperature effective to decompose at least a portion of the resulting polysulfide compound and form elemental sulfur without substantially changing the pressure of the effluent stream; (c) separating sulfur from the resulting cooled effluent stream without changing the pressure of same; and (d) reducing the pressure of the resulting cooled and substantially sulfur-free effluent stream to yield a treated water stream having a substantially reduced thiosulfate content and an H_2S-containing gas stream. Principal utility of the disclosed treatment procedure is associated with the clean-up or regeneration of aqueous streams containing undesired thiosulfate compounds so that they can be reused in the process which originally produced them or discharge into a suitable waste water sewer or stream without causing a major pollution problem. Key features of the disclosed method are: (1) operation of the reaction step with excess amounts of hydrogen sulfide so that unreacted hydrogen sulfide is present in the effluent therefrom; (2) rapid cooling of the total effluent stream from the reaction step under a positive hydrogen sulfide partial pressure; and (3) separation of H_2S from the product stream only after the separation of sulfur.

3,773,663

GREASES THICKENED WITH FIBROUS ASBESTOS WHICH FIBERS ARE COATED WITH ALIPHATIC ESTERS OF N-ACYL (ALIPHATIC) AMINOBENZOIC ACID

Edward A. Cross, Houston, Tex.; Richard L. Frye, Baton Rouge, La.; Robert T. Daniel, Beaumont, and Gordon S. Bright, Nederland, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed Apr. 30, 1970, Ser. No. 33,532
Int. Cl. C10m *5/20, 7/34*
U.S. Cl. 252—13 6 Claims

Lubricating greases thickened with fibrous asbestos which fibers are coated with aliphatic (up to 30 carbon atoms) esters of N-acyl (aliphatic up to 30 carbon atoms) aminobenzoic acid.

3,773,664

BASIC BARIUM-CONTAINING COMPOSITIONS

William Monroe Lesuer, Cleveland, Ohio, assignor to The Lubrizol Corporation, Wickliff, Ohio

Filed Sept. 9, 1971, Ser. No. 179,159
Int. Cl. C10m *3/48*
U.S. Cl. 252—40.7 20 Claims

Compositions useful to improve power transmission in automatic transmission fluids, hydraulic fluids and the like as

replacements for basic barium salts of sperm oil are obtained by reacting an excess of a barium base with the combination of a phenol (preferably an alkylphenol), a fatty acid and an alcohol, wherein the fatty acid and alcohol together contain at least 26 carbon atoms in straight-chain configuration. The compositions are preferably further reacted with carbon dioxide, and they may additionally be reacted with about 1–5% of anthranilic acid.

3,773,665

LUBRICANTS CONTAINING AMINE ANTIOXIDANTS

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 17, 1971, Ser. No. 199,732
Int. Cl. C10m *1/34*
U.S. Cl. 252—50 10 Claims

Lubricants containing a mixture of p,p'-dioctyldiphenylamine and substituted naphthylamines have improved antioxidant properties.

3,773,666

POLYPHTHALAMIDE THICKENED GREASES

Richard N. Nipe, Munster, Ind., assignor to Standard Oil Company, Chicago, Ill.

Filed Sept. 20, 1971, Ser. No. 182,166
Int. Cl. C10m *5/20, 7/34*
U.S. Cl. 252—51.5 A 11 Claims

Lubricating oils thickened to greases with polyphthalamides.

3,773,667

GREASES THICKENED WITH AROMATIC POLYAMIDE-IMIDES AND POLY-4-PHTHALIMIDE

Alan M. Dobry, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Sept. 20, 1971, Ser. No. 182,167
Int. Cl. C10m *5/20, 7/34*
U.S. Cl. 252—51.5 A 8 Claims

Lubricating oils thickened to greases with aromatic polyamideimides and poly-4-phthalimide.

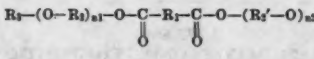
3,773,668

LUBRICATING COMPOSITIONS

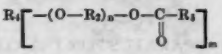
Jacques Denis, Ville d'Avray, and Guy Parc, Rueil Malmaison, both of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison, France

Filed Dec. 2, 1971, Ser. No. 204,329
Claims priority, application France, Dec. 3, 1970, 7043605; Apr. 15, 1971, 7113437
Int. Cl. C10m *1/26*
U.S. Cl. 252—56 R 6 Claims

Lubricating compositions, particularly useful for manufacturing multigrade oils, hydraulic fluids, oils for industrial gears and cutting oils, comprising 5 – 95 percent by weight of a hydrocarbon oil produced according to a conventional process and 5–95 percent by weight of a compound selected from the group consisting of the esters of polyalkyleneglycol ethers complying with the general formula:



wherein R_1 is a divalent hydrocarbon radical having from one to 34 carbon atoms, R_2 and R'_2 are divalent aliphatic radicals having from two to five carbon atoms, R_3 and R'_3 are monovalent hydrocarbon radicals having from one to twenty-five carbon atoms and n_1 and n_3 are integers from two to 50, and those complying with the general formula:



wherein R_4 is a hydrocarbon radical of valency m, having from three to 15 carbon atoms, R_5 is a monovalent hydrocarbon radical having from one to 25 carbon atoms, R_2 is a divalent aliphatic radical having from two to five carbon atoms, n is an integer from two to 50 and m is an integer from two to four.

3,773,669

VESSEL FOR USE IN HEATING FOOD IN A MICROWAVE OVEN

Noriyoshi Yamauchi, Nagoya; Ken Ishino, Nagareyama, and Isao Yokoyama, Ichikawa, all of Japan, assignors to Nippon Toki Kabushiki Kaisha and T.D.K. Electronics Corporation, Nagoya-shi, Aichi-ken, Japan

Filed Feb. 22, 1972, Ser. No. 228,250
Claims priority, application Japan, Sept. 27, 1971, 46/75227
Int. Cl. C04b *33/24, 35/26, 35/38*
U.S. Cl. 252—62.58 5 Claims

A vessel (cooking utensil) for use in heating food in a microwave oven is disclosed. This vessel is produced from a sintered body obtained by firing a mixture of ferrite powder and eucryptite powder.

3,773,670

NOVEL ETCHANT FOR ETCHING THIN METAL FILMS

Lucas A. Colom, Bloomingburg, and Harold A. Levine, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 837,571, June 30, 1969, Pat. No. 3,639,185. This application Sept. 14, 1971, Ser. No. 180,487
Int. Cl. C23q *1/20;* C23f *1/02*
U.S. Cl. 252—79.5 4 Claims

A composition for etching thin films of metal, such as chromium or molybdenum, comprising alkaline metal salts of weak organic acids which yield solutions having a pH in the range of 12 to 13.5 e.g. sodium or potassium-meta or orthosilicates or sodium orthophosphate, and oxidizing agents active in alkaline solutions, such as potassium permanganate or sodium ferricyanide.

3,773,671

PRODUCTION OF GRANULAR MIXTURES

Ali Ghalib Mohammed Hussain, Elizabeth, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 828,938, May 29, 1969, abandoned.
This application Sept. 8, 1971, Ser. No. 178,800
Int. Cl. C11d 7/42
U.S. Cl. 252—89 3 Claims

Process for producing granular enzyme product which comprise mixing an aqueous slurry of powdered enzyme preparation with hydrated pentasodium tripolyphosphate while agitating.

3,773,672

SOAP INSERT

Emilio A. Bredice, 17820 Lakewood Blvd., Bellflower, Calif.

Filed Feb. 23, 1972, Ser. No. 228,631
Int. Cl. C11d 17/04
U.S. Cl. 252—92 7 Claims

A plate-like insert is positioned within the center of a bar of soap adapted to keep the soap from breaking as it is used. The insert is preferably resilient and designated to stick to the soap.

3,773,673

BLEACHING COMPOSITION

Peter Anthony Jenkins, Corbridge, and Alexander Ritchie, Newcastle upon Tyne, both of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 96,650, Dec. 9, 1970, abandoned.
This application Nov. 20, 1972, Ser. No. 308,075
Int. Cl. C11d 7/54
U.S. Cl. 252—95 14 Claims

Bleaching compositions having mixtures of persulfate bleaching compounds and organic peroxy-compounds in proportions such that the weight ratio of available oxygen from the persulfate to that from the organic peroxy compounds is up to 3:1. The compositions are particularly useful for washing and bleaching at lower temperatures. The bleaching compositions can be employed with detergent compounds to provide bleaching and detergent compositions having from 0.1 to 3 percent available oxygen by weight. A method aspect of the invention comprises treating fibrous materials in aqueous solution with the mixture of bleaching agents of the invention at a concentration of from 1 to 100 parts per million by weight of available oxygen.

3,773,674

DETERGENT COMPOSITION CONTAINING ENZYMES

Wolfgang E. Adam, Wemmel, and Christian Barrat, Brussels, both of Belgium, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 25, 1971, Ser. No. 119,043
Int. Cl. C11d 7/38
U.S. Cl. 252—99 14 Claims

A granular detergent composition containing (a) an organic detergent, (b) an alkaline builder, (c) glucose polymers with an α-1,4 main linkage, (d) a compound of the general formula R_1 —$(CHOH)_n$—Y, wherein Y represents a salt or an ester radical derived from a carboxylic radical, n is 3 or 4, and R_1 is CH_2OH or CHO, and (e) an α-amylase. The glucose polymers and the compound of the general formula $R_1(CHOH)_n$—Y protects the α-amylase against denaturation and degradation.

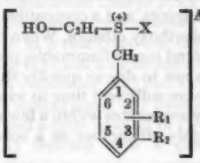
3,773,675

AGENTS FOR INHIBITING THE CORROSION OF IRON IN ACID SOLUTION

Lorenz Heiss, Hofheim, Taunus, and Martin Hille, Bad Soden, Taunus, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt, Germany

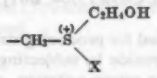
Filed Dec. 21, 1971, Ser. No. 210,558
Claims priority, application Germany, Dec. 28, 1970, P 20 63 987.6
Int. Cl. C11i 7/34; C23g 1/06
U.S. Cl. 252—147 8 Claims

Corrosion inhibiting agents having the formula



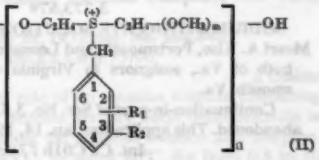
(I)

in which R_1 stands for an alkyl radical having 4 to 18 carbon atoms and bound in the 6-, 4- or 2-position to the benzene nucleus, R_2 stands for hydrogen, an alkyl radical having up to 9 carbon atoms, or a radical of the formula



(IV)

A stands for one of the anions $Cl^{(-)}$, $Br^{(-)}$, $I^{(-)}$, $CH_3OSO_3^{(-)}$ and $1/2\ SO_4^{(-2-)}$ in a quantity which is equivalent to the number of the positively charged sulfur atoms in the total molecule of the formula I, and X stands for a lower alkyl radical, the radical $-C_2H_4OH$ or a radical of the formula



(II)

in which *n* means an integer of 1 to 30 and *m* stands for 0 or 1 and wherein, if *n* is at least 3, in this formula II an amount of

up to one third the radicals which are enclosed by the bracket [] can be replaced by radicals of the formula

$$+O-C_2H_4-S-C_2H_4(-CCH_2)_m+ \quad \text{(III)}$$

3,773,676

CLEANER FOR PRINTING EQUIPMENT

Henry Barringer Boyles, Atlanta, Ga., assignor to Consolidated Foods Corporation, Atlanta, Ga.

Filed Dec. 4, 1972, Ser. No. 311,512
Int. Cl. C11d 7/52
U.S. Cl. 252—171 17 Claims

A non-inflammable cleaner for printing equipment is composed of a lower boiling non-inflammable halogenated liquid hydrocarbon, a higher boiling non-inflammable halogenated liquid hydrocarbon and a petroleum solvent such as mineral spirits, blended together in critical proportions so that the resultant blend is non-inflammable but possesses the required drying characteristics and cleaning efficacy.

3,773,677

PRESS WASH

Henry Barringer Boyles, Atlanta, Ga., assignor to Consolidated Foods Corporation, Atlanta, Ga.

Filed Dec. 4, 1972, Ser. No. 311,511
Int. Cl. C11d 7/52
U.S. Cl. 252—172 19 Claims

A solvent composition for cleaning ink and other soil material from printing presses is formulated by blending together in a critical ratio higher boiling non-flammable chlorinated or brominated hydrocarbon liquid, low boiling chlorinated or brominated hydrocarbon liquid, petroleum solvent such as mineral spirits, and a compatible surfactant, such as nonylphenoxy polyethoxy ethanol. When blended together in proper ratio the blend is non-flammable, possesses desirable characteristics so as not to dry so quickly that the printer or pressman does not have sufficient time to wipe the equipment clean but completely evaporates within a few minutes after application, and is highly efficacious as a solvent for the soil materials.

3,773,678

PROCESS FOR AGGLOMERATING SODIUM CARBONATE PEROXIDE

Theodore F. Munday, Kensall Park, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Nov. 9, 1971, Ser. No. 197,137
Int. Cl. C01b 15/04; B01j 2/12
U.S. Cl. 252—186 8 Claims

A process is provided for producing strong agglomerates of sodium carbonate peroxide by subjecting particles of sodium carbonate peroxide to rotary agitation, contacting the particles with an aqueous sodium silicate solution, continuing the rotary agitation of the wet particles until they have become agglomerated, drying the wet, agglomerated particles at temperatures between room temperature, e.g., 25°C., and 80°C. and recovering dry agglomerates having a size of 16 to 40 mesh, a bulk density of 0.4 to 0.9 g/cc, and containing sufficient sodium silicate to provide 1 to 5 percent by weight SiO_2.

3,773,679

SODIUM DITHIONITE SOLUTION STABILIZATION

Mearl A. Kise, Portsmouth, and Leonard C. Ellis, Chesapeake, both of Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Continuation-in-part of Ser. No. 3,527, Jan. 16, 1970, abandoned. This application Jan. 14, 1972, Ser. No. 218,011
Int. Cl. C01b 17/66
U.S. Cl. 252—188 11 Claims

Sodium dithionite in solution is widely used in bleaching and vat dyeing of textiles. Unfortunately, however, losses occur not only through decomposition during dissolving of the salt in question, but also during storage of the solution. To avoid decomposition of such solutions, the presence of sulfite ion is introduced by sodium sulfite, or a comparable variant compound preferably with a pH adjustment under either aerobic or anaerobic conditions. The effect hereof in protecting the sodium dithionite against aerobic decomposition is at 7 percent to 45 percent of the decomposition rate for unprotected systems. With air exclusion, the rate in the protected system is at 2 percent to 71 percent that for the unprotected system. As indicated, mixtures of sodium sulfite or sodium bicarbonate with sodium bisulfite (anhydrous) have likewise been found effective as a stabilizing media for the sodium dithionite solution, all by virtue of the sulfite ion concentration increase therein.

3,773,680

ACCEPTOR COMPOSITIONS AND METHOD FOR OXYGEN ENRICHMENT PROCESSES

Jack Huebler, Deerfield; Lester G. Massey, Moreland Hills, and Paul B. Tarman, Elmhurst, all of Ill., assignors to Consolidated Natural Gas Service Co., Inc., Cleveland, Ohio

Filed Apr. 7, 1972, Ser. No. 242,153
Int. Cl. C01b 13/08
U.S. Cl. 252—186 20 Claims

Special oxygen acceptor compositions for the production of oxygen in modified Brin-type processes. The compositions comprise a physical mixture of finely ground barium peroxide and dolomitic quicklime in which the weight percent of the dolomitic quicklime ranges up to about 92 percent. The use of dolomitic quicklime in conjunction with barium peroxide has been found to increase the oxygen production per mole of barium peroxide more than ten-fold. Typical operation conditions for production of oxygen in accord with the process utilizing the new material are 1–50 psia, at 1,350°–1,600°F during the reduction (oxygen production) half of the cycle, and 40–200 psia, at 1,300°–1,550°F during the oxidation half of the cycle. The cycle time for production is substantially decreased. The particle size of the barium peroxide in the composition mixture is preferably smaller than about 100 mesh, while the dolomitic quicklime is preferably smaller than about 40 mesh. The dolomitic quicklime must be prepared under conditions to insure that the final carbonate content of the dolomitic quicklime-barium peroxide mixture is such that the mole ratio of carbon dioxide to barium peroxide is less than 1.0. The composition may be in various forms: powder, granular, pelletized, coated on saddle supports and the like. In addition to increased oxygen production per mole of barium peroxide and reduction in cycle times, a significant reduction in the amount of barium oxides required to produce oxygen at any given rate is exhibited by the compositions.

3,773,681

METHOD FOR IMPROVING THE PERFORMANCE OF HALOPHOSPHATE PHOSPHOR

Frank M. Vodoklys, Wayne, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 11, 1971, Ser. No. 152,080
Int. Cl. C09k 1/36
U.S. Cl. 252—301.4 P 7 Claims

Method for improving the performance of fluorescent lamps which incorporate halophosphate phosphor. In practicing this method, after the phosphor is initially prepared, a predetermined small amount of antimony trifluoride is mixed with the phosphor and the mixture is refired under predetermined conditions. The refired material is then processed into finely divided form suitable for a coating onto the envelopes of fluorescent lamps.

3,773,682

PRODUCTION OF METAL-CONTAINING MATERIALS BY GEL-PRECIPITATION

Alan Marshall, Beckermet; Geoffrey Alan Holburt, Seascale, and Edward Sydney Lane, Didcot, all of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 27, 1972, Ser. No. 221,439

Claims priority, application Great Britain, Feb. 1, 1971, 3,632/71

Int. Cl. C09k *3/00*

U.S. Cl. 252—301.1 S 8 Claims

In a gel-precipitation process for the production of ceramic microspheres a solution containing a metal salt is mixed with a polyacrylamide compound which acts as a gelating agent and with formamide which acts as a modifying agent to form a homogeneous mixture which is introduced drop-wise into an aqueous alkaline solution in which the drops are converted individually into solid gel spheres.

3,773,683

NOVEL SUSPENDING AGENT COMPOSITION FOR USE IN POWDER AEROSOL COMPOSITIONS AND PROCESS FOR PREPARATION

Lawrence Joseph Aubert, Cincinnati, Ohio, assignor to The Proctor & Gamble Company, Cincinnati, Ohio

Filed Jan. 11, 1972, Ser. No. 216,991

Int. Cl. C09k *3/30*

U.S. Cl. 252—305 9 Claims

A process for the preparation of a propellant containing suspending agent composition having enhanced suspension properties for use in powder aerosol compositions, which process comprises combining a bulking agent selected from the group consisting of montmorillonite clays and hydrophobically treated montmorillonite clays with a propellant and subjecting said combination to high shear mixing until the bulking agent is uniformly dispersed, and the propellant containing suspending agent composition prepared by said process.

3,773,684

DIPOLAR ELECTRO-OPTIC COMPOSITIONS AND METHOD OF PREPARATION

Alvin M. Marks, 153-16 10th Ave., Whitestone, N.Y.

Continuation-in-part of Ser. No. 378,836, June 29, 1964, Pat. No. 3,512,876. This application Mar. 3, 1970, Ser. No. 16,185

Int. Cl. B01j *13/00*

U.S. Cl. 252—309 17 Claims

Methods and apparatus incorporating suspensions of assymetric minute dipolar particles for the control of electromagnetic radiation. The physical electrical and optical properties of the dipolar particles and their suspending medium are specified in conjunction with apparatus employing them.

3,773,685

DIFUNCTIONAL AND TRIFUNCTIONAL POLYSILOXANES AS ADDITIVES TO LATEX FOAM RUBBER

David T. Schrader, Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed June 1, 1970, Ser. No. 42,447

Int. Cl. B01d *17/00*; C08c *17/08*; C08d *13/08*

U.S. Cl. 252—358 6 Claims

A foam rubber backing for a carpet wherein the foam rubber has therein a trifunctional or difunctional polysiloxane selected from the group having the formulas:

$$R'_aR_bSiO_{(4-a-b)/2}$$

or

$$R'_cR_d(OH)_eSiO_{(4-c-d-e)/2}$$

or

$$R^2_fR^3_gSiO_{(4-f-g)/2}$$

wherein R, R' R^3 are monovalent hydrocarbon radicals, R^2 is a monovalent hydrocarbon radical including a hydroxy radical, *a* varies from 0.05 to 3.3×10^{-5}, *b* varies from 2.05 to 2.00, *c* varies from 0.05 to 3.3×10^{-5}, *d* varies from 1.91 to 2.00, *e* varies from 0.14 to 9.9×10^{-5}, *f* varies from 0.25 to 1.9×10^{-4} and g has the value of 2.00. The liquid polysiloxane may be added to the rubber latex in the form of an emulsion having a nonionic or anionic type of surfactant therein.

3,773,686

SIX-STEP REGENERATION PROCEDURE FOR A COKE-DEACTIVATED BIMETALLIC PLATINUM GROUP-GROUP IV A CATALYST

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 797,272, Feb. 6, 1969, Pat. No. 3,634,292. This application Sept. 9, 1971, Ser. No. 179,156The portion of the term of this patent subsequent to Jan. 11, 1989, has been disclaimed.

Int. Cl. B01j *11/02*, *11/18*

U.S. Cl. 252—415 21 Claims

A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a group IVA metallic component, and a halogen component with a porous carrier material and which has been deactivated by a deposition of carbonaceous materials thereon during a previous contacting with a hydrocarbon charge stock at an elevated temperature, is regenerated by the sequential steps of: (1) burning carbon therefrom at a relatively low temperature with a gas stream containing H_2O and a small amount of O_2, (2) treating with a gas stream containing H_2O and a small amount of O_2 at a relatively high temperature, (3) treating with a gas stream containing H_2O and a large amount of O_2 at the relatively high temperature, (4) treating with a gas stream containing halogen or a halogen-containing compound and water, (5) purging O_2 and H_2O from the resulting catalyst and (6) reducing with a dry hydrogen stream. Key features of the resulting method are: (1) presence of water in the gas streams used in all steps except the purging and reduction steps, (2) careful control of the inlet temperature used during each step, (3) adjustment of halogen content of the catalyst after the carbon-burning step and prior to the reduction step, (4) careful control over the composition of the gas streams used in the various steps thereof and (5) exclusion of sulfur compounds from all gas streams utilized.

3,773,687

AQUEOUS TERTIARY BUTYL HYDROPEROXIDE

Alfred E. Borchert, Cherry Hill, N.J.; Walter A. Mameniskis, Drexel Hill, and Frank W. Melpolder, Wallingford, both of Pa., assignors to Atlantic Richfield Company, New York, N.Y.

Filed June 20, 1972, Ser. No. 264,448

Int. Cl. C07c *73/06*

U.S. Cl. 252—426 2 Claims

The decomposition rate of an aqueous solution containing about 60–75 weight percent tertiary butyl hydroperoxide is stabilized by maintaining the aqueous solution at a temperature of from about 45°C. to about 80°C. for from 0.5 to 10 days. The concentration of the tertiary butyl hydroperoxide in the stabilized product is at least 95 percent of that of the unstabilized solution because only a small fraction of the hydroperoxide is decomposed by the stabilizing treatment.

3,773,688

CATALYST SYSTEM FOR THE POLYMERIZATION OF OLEFINS

Hans-Georg Trieschmann, Hambach; Friedrich Urban, Limburgerhof; Guenther Schweier, and Josef Kohnle, both of Ludwigshafen, all of Germany, assignors to Badische Anilin- & SodatFabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed June 16, 1971, Ser. No. 153,832
Int. Cl. C08f *1/40*
U.S. Cl. 252—429 C 1 Claim

Catalyst system for the polymerization of olefins consisting of (1) a powdered inorganic carrier and, applied thereto, (2) an active composition consisting of (2.1) a titanium, zirconium or vanadium compound and (2.2) an aluminum, magnesium or zinc compound. The characterizing feature is that the carrier (1) has been obtained by heating a substance of the general formula

$$(Me^{II})_m \cdot (Me^{III})_n \cdot (OH)_o \cdot (CO_3)_p \cdot (H_2O)_q,$$

in which Me^{II} denotes a metal or transition metal present in a divalent form; Me^{III} denotes a metal or transition metal present in a trivalent form; m is one of the integers 1 to 10; n is one of the integers 2 to 5; o is one of the integers 2 to 24; p is one of the integers 1 to 3; and q is one of the integers 0 to 10; provided that $2xm + 3xn = o + 2xp$ = an integer from 8 to 26 inclusive.

3,773,689

CATALYST FOR ALKYLATION OF AROMATIC HYDROCARBONS

Bernard Torck, Chatou, and Lucien Sajus, Croissy-sur-Seine, both of France, assignors to Institut Francais Du Petrole Des Carburants Et Lubrifiants, Rueil-Malmaison, France

Filed Sept. 30, 1971, Ser. No. 185,365
Claims priority, application France, Sept. 30, 1970, 7035450
Int. Cl. B01j
U.S. Cl. 252—431 R 5 Claims

Catalyst comprising a compound of formula R Al X_2, in which R is a monovalent hydrocarbon radical and X is an electronegative group, and a polyhydroxyaromatic compound preferably of the formula $(R')_mAr(OH)_x$ in which x is an integer greater than 1, m is zero or an integer such that (x + m) is not greater than the maximum value of the valency of Ar, Ar is an aromatic radical of valency (x + m) and the m groups R' are substituents, particularly halogen atoms or hydrocarbon monovalent radicals.

3,773,690

ZEOLITE ADSORBENTS

Gerhard Heinze, Schildgen; Gerhard Reiss; Friedrich Schwochow, both of Leverkusen, and Gunter Ulisch, Leverkusen-Kluppersteg, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 23, 1971, Ser. No. 127,271
Claims priority, application Germany, Apr. 9, 1970, P 20 16 838.1
Int. Cl. B01j *11/40*
U.S. Cl. 252—455 Z 4 Claims

Powdered faujasite type zeolite, optionally along with powdered type A zeolite, is bonded by silica gel into granules, and the granules are treated at about 15° to 100°C with an aqueous solution containing at least about 0.7 mole of Al_2O_3 in the form of aluminate per mole of silica gel binder and containing sodium hydroxide in such amount that the H_2O/Na_2O molar ratio is about 15 to 60, whereby the silical gel binder within each granule is converted to a type A zeolite. The product is thus a binder-free granular zeolite with type A zeolite and faujasite type zeolite distributed substantially uniformly through each granule; about 20 to 95 percent and preferably about 20 to 50 percent by weight is the type A zeolite. The product is characterized by superior adsorptivity compared with a physical mixture of powders of the two zeolites of the same overall composition.

3,773,691

REMOVAL OF RESIDUAL CARBON CONTAMINATES FROM ALUMINA

Bruce E. Leach, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed Dec. 23, 1971, Ser. No. 211,770
Int. Cl. B01j *11/32*
U.S. Cl. 252—463 4 Claims

An improved process for producing low bulk density, high porosity, high surface area alumina having a low residual carbon contamination content wherein the improvement comprises contacting said alumina with super heated steam to reduce the residual carbon contamination content.

3,773,692

CATALYSTS FOR THE OXIDATION OF ALPHA, BETA-UNSATURATED ALDEHYDES TO ALPHA, BETA-UNSATURATED CARBOXYLIC ACIDS AND PROCESS FOR THEIR PREPARATION

Jorg Hensel; Theodor Lussling, both of Grossauheim; Ewald Noll, Grosskrotzenburg; Hans Schaefer, Grossauheim, and Wolfgang Weigert, Offenbach, all of Germany, assignors to Deutsche Gold- und Silber-Schneideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed Oct. 12, 1971, Ser. No. 188,462
Claims priority, application Germany, Oct. 13, 1970, P 20 50 155.7
Int. Cl. B01j *11/06, 11/20, 11/22*
U.S. Cl. 252—455 R 28 Claims

Catalyst for the oxidation of an α,β-unsaturated aldehyde to an α,β-unsaturated carboxylic acid, said catalyst comprising (A) a mixture of oxides of the elements antimony, molybdenum, vanadium and tungsten and/or compounds of said elements and oxygen, and (B) at least one oxide or oxygen containing compound of the elements lead, silver, copper, tin, titanium or bismuth, said catalyst having an atomic ratio of antimony to molybdenum to vanadium to tungsten to Group (B) elements of about 1 – 60 : 12 : 0.5 – 25 : 0.1 – 12 : 0.1 – 12. Processes for the use and preparation of the catalysts are provided.

3,773,693

METHOD OF PREPARING SUPPORTED OXIDATION CATALYSTS FOR PRODUCING ETHYLENE OXIDE

Benedetto Calcagno; Natale Ferlazzo, both of Milan, and Marcello Ghirga, Bresso, all of Italy, assignors to Societa Italiana Resine S.I.R.S.p.A., Milan, Italy

Continuation of Ser. No. 877,493, Nov. 17, 1969, abandoned.
This application June 26, 1972, Ser. No. 266,115
Claims priority, application Italy, Nov. 23, 1968, 24089 A/68
Int. Cl. B01j *11/12*
U.S. Cl. 252—466 PT 7 Claims

Ethylene oxidation catalysts are prepared by depositing silver oxide and metallic or oxide platinum, palladium or gold on an inert support, treating the support with specified organic acids such as lactic acid in aqueous solution and then heat treating.

3,773,694

PROCESS FOR THE POLYMERIZATION OF OXIDES AND CATALYST FOR THE POLYMERIZATION

Tetsuya Nakata, Osaka, and Kiyoshige Kawamata, Itami, both of Japan, assignors to Osaka Soda Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 849,519, Aug. 12, 1969, abandoned. This application July 7, 1971, Ser. No. 160,512

Claims priority, application Japan, Aug. 16, 1968, 43/58314; Mar. 29, 1969, 44/24116; May 2, 1969, 44/34163; June 28, 1969, 44/51159; July 3, 1969, 44/53391

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A 5 Claims

A method for the polymerization of vicinal alkylene oxides using a polymerization catalyst which is the reaction product of an organotin compound (A) with an esterified product (B), the organotin compound (A) containing at least one tin-to-carbon bond in its molecule, and the esterified product (B) being a completely or partially esterified product of oxyacid of phosphorus or derivative thereof, or a combination of reactants capable of forming such ester or derivative.

3,773,695

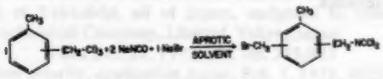
ISOCYANURATE AND HALOGEN-CONTAINING POLYISOCYANATES

Perry A. Argabright, and Brian L. Phillips, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 830,410, June 4, 1969, Pat. No. 3,627,689. This application June 24, 1971, Ser. No. 156,549

Int. Cl. C08g *22/02, 22/22, 22/44*

U.S. Cl. 260—2.5 AW 14 Claims



New halogenated polyisocyanates containing isocyanurate rings are prepared in a single stop by reacting chlorinated organic compounds, especially chloromethylated aromatics, with metal iodide or bromide and metal cyanate in the presence of a dipolar aprotic solvent where the mole ratio of cyanate in the metal cyanate to chlorine in the chlorine containing organic compound is from about 0.25 to less than about 0.8. The polyisocyanate compositions are useful as starting materials in the production of urethane polymers as coatings, films, foams, adhesives, etc. The compositions are especially flame retardant, and have inherent thermal stability provided by the high concentration of isocyanurate rings in the molecule and from the presence of halide groups.

3,773,696

TETRABROMO ETHER DIOL AS A FLAME-RETARDANT FOR POLYURETHANE FOAMS

Anthony Joseph Papa, Saint Albans, W. Va.; William Robert Proops, Claymont, Del., and Theodore Curtis Shields, Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 16, 1971, Ser. No. 172,301

Int. Cl. C08c *17/08*

U.S. Cl. 260—2.5 AJ 5 Claims

This invention is directed to the new compound, 2,3-dihydroxyprop-1-yl 2,3,7,8-tetrabromooct-1-yl ether, and to flame-retarded polymeric compositions having said compound incorporated therein. The tetrabromooctyl ether diol is employed with particular advantage in the formation of flame-retarded cellular polyurethanes including self-extinguishing flexible foams.

3,773,697

PROCESS FOR PREPARING RAPID-SETTING NON-CELLULAR POLYURETHANES

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 5, 1972, Ser. No. 259,838

Int. Cl. C08k *1/66*

U.S. Cl. 260—18 TN 9 Claims

Instant set polyurethane castings are prepared by mixing a polyol having a functionality of 2-8 and an equivalent weight of from 31 to 150, an organic polyisocyanate, an organo metallic catalyst, and a modifier which can be either a liquid or a solid or a mixture of both. The amount of modifier present is from 0–18 percent by weight of the combined weights of all the components of the system excluding the catalyst. This mixture is poured into a mold and then within 30 seconds after solidification, the resultant casting is quenched with a fluid at a temperature of from about 25°C down to about −100°C.

3,773,698

STABILIZED MELT-PROCESSABLE ETHYLENE/CHLOROTRIFLUOROETHYLENE COPOLYMER COMPOSITIONS

Ghazi Khattab, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 16, 1971, Ser. No. 124,911

Int. Cl. C08f *45/62*

U.S. Cl. 260—23 XA 14 Claims

About equimolar ethylene/chlorotrifluoroethylene copolymer compositions are stabilized against thermal degradation so as to render them melt-processable by incorporating therein a four-component stabilizing system comprising (a) a phosphite of an organic polyhydric phenol; (b) a salt of a carboxylic acid and a metal of Group II of the Periodic Table; (c) a thio dipropionic acid ester or alkali metal salt; and (d) an alkaline earth metal oxide.

3,773,699

PROCESS EMPLOYING A REDOX CATALYST SYSTEM FOR MANUFACTURING LINKED ETHYLENE VINYL GRAFTED COPOLYMER DISPERSIONS

Eduard Bergmeister; Erwin Lieb, and Hubert Wiest, all of Burghausen-Obb., Germany, assignors to Wacker-Chemie G.m.b.H., Munich, Bavaria, Germany

Continuation of Ser. No. 881,317, Dec. 1, 1969, abandoned. This application Dec. 3, 1971, Ser. No. 204,712

Claims priority, application Germany, Jan. 9, 1969, P 19 00 967.7

Int. Cl. C08f *45/36, 15/00*

U.S. Cl. 260—29.6 RB 3 Claims

Process employing a redox catalyst system for manufacturing grafted ethylene vinyl copolymer emulsions which comprises preparing a stable uncoagulated ethylene-vinyl acetate copolymer backbone emulsion having a weight percentage ratio of ethylene constituent from 2 to 50, and reacting said backbone emulsions with a graftable olefinic unsaturated compound at a temperature of −20 to +60°C in the presence of a colloidally dispersed previous metal of the VIII sub-group of the periodic system and a member of the group consisting of inorganic and organic per compounds, hydrogen and hydrogen-yielding compounds.

3,773,700

NORMALLY CRYSTALLINE VINYLIDENE CHLORIDE POLYMER LATEX AND FIBER MODIFIED CEMENT COMPOSITIONS HAVING ENHANCED ELASTIC MODULUS

R. Douglas Eash, Midland, and Lz F. Lamoria, Bay City, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 52,110, July 2, 1970, abandoned. This application Feb. 4, 1972, Ser. No. 223,741
Int. Cl. C08f 45/24, 45/14
U.S. Cl. 260—29.6 S 3 Claims

Normally crystalline vinylidene chloride polymer latex-modified portland cement compositions having exceptionally high elastic modulus by the incorporation therein of from about 1.5 to about 3 percent of composition volume of a fibrous mixture consisting of (a) a nylon fiber and (b) a steel fiber wherein the fibrous materials are present in the mixture in amounts representing a ratio of (a) to (b) of about 1:2 to 2:1 based on mixture volume; which compositions are particularly suited for use in construction in preparing or repairing structures such as pavement and the like requiring high energy absorption properties.

3,773,701

PREPARATION OF POLYURETHANES

Frederic Christian Loew, Ridgewood, and Edward Stone, Morris Plains, both of N.J., assignors to Inmot Corporation, New York, N.Y.

Continuation of Ser. No. 33,886, May 1, 1970, abandoned, and a continuation-in-part of Ser. No. 819,337, April 26, 1969, abandoned. This application Mar. 2, 1972, Ser. No. 231,433The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.
Int. Cl. C08g 51/44, 51/46
U.S. Cl. 260—32.6 NR 14 Claims

High molecular weight linear thermoplastic elastomeric polyurethanes of I.V. 0.9–2 are prepared by reaction in solution. A hydroxyl-terminated prepolymer and a diol chain extender are reacted, in the solvent, with a small excess of diisocyanate, until the —NCO content becomes constant, then a diol chain extender in amount equivalent to the remaining —NCO; reaction is continued, and then terminated after the high I.V. is attained.

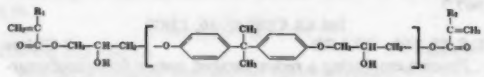
3,773,702

TWO-COMPONENT ADHESIVE COMPOSITION

Koichi Ohashi, Osaka, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka-shi, Osaka-fu, Japan

Filed Feb. 9, 1971, Ser. No. 114,081
Claims priority, application Japan, Feb. 10, 1970, 45/11601
Int. Cl. C08f 45/28, 45/30, 45/38
U.S. Cl. 260—31.2 N 16 Claims

A two-component adhesive composition consisting of a main composition comprising 50 to 80 parts by weight of at least one of divinyl compounds of the formula:



wherein R_1 and R_2 are each hydrogen, methyl or ethyl and n is an integer of 1 to 20, 0.05 to 10 parts by weight of at least one of organic peroxides, 0.5 to 15 parts by weight of acrylonitrile-butadiene-styrene terpolymer or acrylonitrile-butadiene rubber and 2 to 120 parts by weight of at least one of vinylic monomers (but each vinylic monomer not exceeding 40 parts by weight) and an accelerator composition comprising 0.01 to 10 parts by weight of at least one of thiourea derivatives, 0.01 to 10 parts by weight of α,α'-dipyridyl, 0.001 to 5 parts by weight of at least one of metal salts of organic or inorganic acids and 100 to 75 parts by weight of at least one of volatile organic solvents.

3,773,703

EPOXY ADHESIVE COMPOSITION

Thomas W. Smeal, Franklin Twp., Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 19, 1972, Ser. No. 219,174
Int. Cl. C08g 51/28
U.S. Cl. 260—33.6 EP 10 Claims

Epoxy-type adhesive compositions comprising glycidyl polyether of a dihydric phenol, filler, a flexibilizer and a curing agent, preferably, a mixture of an amine hardener and a rigidifying tertiary amine catalyst. Enhancement of special properties is obtained by admixing a silane or silicone adhesion promoter. The use of a low cost amine hardener is made possible by the addition of an aromatic dihydroxy compound and/or a high boiling coal-tar fraction.

3,773,704

WATER SOLUBLE PROTECTIVE COATING

Robert McDowell Hall, and Jimmie Joe Mumm, both of Portland, Oreg., assignors to Tektronix, Inc., Beaverton and Indusco Chemical Products, Portland, both of Oreg.

Filed Nov. 8, 1971, Ser. No. 196,798
Int. Cl. C08g 51/30
U.S. Cl. 260—33.8 R 9 Claims

The present invention relates to a protective coating for application onto selected areas of a member to prevent another material from adhering thereto when this other material is applied onto selected areas of the member; whereafter the protective coating is removed via water due to its water soluble characteristics.

3,773,705

THERMOPLASTIC MOULDING COMPOSITIONS REINFORCED WITH A MIXTURE OF GLASS AND ASBESTOS FIBERS

George Leonard Wicker, Milnrow, England, assignor to Turner Brothers Asbestos Company Limited, Manchester, England

Filed Nov. 12, 1971, Ser. No. 198,410
Claims priority, application Great Britain, Nov. 18, 1970, 54,899/70; Dec. 10, 1970, 58,746/70
Int. Cl. C08g 51/10
U.S. Cl. 260—37 N 5 Claims

Thermoplastic compositions comprise a thermoplastic polymer and are reinforced by a mixture of asbestos fibres and glass fibres. The compositions may be granular moulding compositions or moulded articles.

3,773,706

METHOD FOR INDICATING STAGE OF CURE OF CROSSLINKED RESINS AND COMPOSITIONS RESULTING THEREFROM

Harold F. Dunn, Jr., Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,589
Int. Cl. C08g 51/14
U.S. Cl. 260—37 EP 11 Claims

This invention discloses the use of phenosafranin with crosslinkable synthetic organic polymer resins as a visible qualitative degree-of-cure indicator. It also discloses the use of

phenosafranin to enhance visibility of thin film of resin and to serve as a visible degree-of-mixing indicator. This invention also discloses novel compositions of matter containing curable synthetic organic polymer resins in combination with phenosafranin and dye.

3,773,707

POLYAMIDE MOLDING COMPOSITION CONTAINING PLAGIOCLASE FELDSPAR

Karl Heinz Hermann, Krefeld-Bockum, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 8,404, Feb. 3, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,996

Claims priority, application Germany, Feb. 20, 1969, P 19 08 471.0

Int. Cl. C08g *51/04*

U.S. Cl. 260—37 N 14 Claims

Filler-containing polyamide mixtures of improved impact strength said fillers being minerals from the feldspar group, and a process for the production of said polyamide mixtures. The content of the filler material is of from 1 to 70 percent, preferably of from 10 to 50 percent, by weight based on the total mixture. Additionally, the mixture can contain an organosilicon compound in an amount of from 0.001 to 1 percent by weight, based on the mineral, of the feldspar group as adhesion promoter.

3,773,708

COMPOSITION OF NOVEL MODIFIED FILLER AND RESIN

Hiroshi Takahashi, Tokyo; Hiroshi Yui, and Takayuki Inoue, both of Yokkaichi, all of Japan, assignors to Mitsubishi Petrochemical Company, Limited, Tokyo, Japan

Filed Jan. 21, 1972, Ser. No. 219,823

Claims priority, application Japan, Feb. 1, 1971, 46/3717

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 R 10 Claims

Filler modified plastic, rubber or thermosetting resin compositions are prepared by admixing a thermoplastic resin, thermo-setting resin or rubber with a modified filler, produced by polymerizing a free radical polymerizable or ionic polymerizable monomer, onto the surface of the filler.

3,773,709

REINFORCED BUTADIENE-STYRENE CO-POLYMERS

Stephen P. Boutsicaris, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 854,280, Aug. 29, 1969, abandoned. This application May 17, 1972, Ser. No. 254,297

Int. Cl. C08c *11/16*; C08d *3/08*

U.S. Cl. 260—41.5 A 13 Claims

A new sheet molding compound (SMC) comprises a calendered sheet of a high-viscosity, high-vinyl butadiene-styrene copolymer containing a peroxide compound equivalent in amount to 0.5–8 percent by weight of dicumyl peroxide. This sheet molding compound can comprise one calendered sheet containing fiberglass or other fibrous reinforcement, or if desired, may comprise two or more such sheets with or without a layer of fiberglass or other fibrous reinforcement between adjacent sheets. Such calendered sheets or composites are used in a one-step single-component system for compression molding with improved results in handling and in ultimate properties as compared to present sheet molding compounds.

3,773,710

FLEXIBLE THERMOSETTING ACRYLIC COATING COMPOSITIONS

Claus Victorius, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 26, 1972, Ser. No. 257,239

Int. Cl. C08g *39/10, 51/22*

U.S. Cl. 260—41 B 8 Claims

The thermosetting acrylic enamel has as film-forming constituents

a polyblend of a relatively hard acrylic polymer that has a glass transition temperature of greater than −20°C., and a soft acrylic polymer that has a glass transition temperature of less than −20°C.,

wherein the difference in glass transition temperature between the hard and soft acrylic polymer is at least 30°C.; and

a heat reactive condensate such as hexa-(methoxymethyl)melamine, a butylated or methylated melamine formaldehyde resin, or a polyisocyanate that is compatible with the polyblend;

the acrylic enamel forms a flexible, durable finish useful for example for rubber-coated automobile and truck bumpers, as a finish for plastics for foamed structures, for flexible metal substrates, for example, for coil coatings

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3,773,711

SUBSTITUTED 4,5-BENZO-1-OXA-3-THIA-2-PHOSPHOLANE

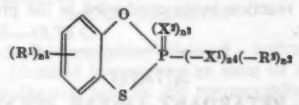
James L. Dever, Lewiston, and Norman W. Dachs, Buffalo, both of N.Y., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 664,599, Aug. 31, 1967, abandoned. This application Nov. 23, 1970, Ser. No. 92,164

Int. Cl. A01n *9/36*; C07f *9/08, 9/16*

U.S. Cl. 260—937 21 Claims

The invention is directed to a compound of the formula:



wherein X^1 is selected from the group consisting of oxygen, sulfur and nitrogen; X^2 is oxygen or sulfur; R^1 is alkyl, aryl, alkyl substituted by aryl and aryl substituted by alkyl; R^2 is alkyl, aryl, alkyl substituted by aryl and aryl substituted by alkyl or alkaryl; n^1 is from zero to two; n^3 is zero or one; n^4 is zero or one; n^2 is the valence of X^1 minus one when n^4 is 1; when n^4 is zero, n^2 is 1. The compound is useful as a chemical intermediate and as an insecticide.

3,773,712

AMINOBENZOIC ACID DERIVATIVES

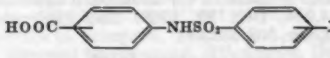
Ronald F. Borne, Oxford, Miss., assignor to The University of Mississippi, University, Miss.

Filed Nov. 7, 1972, Ser. No. 304,485

Int. Cl. C07c *143/80*

U.S. Cl. 260—518 A 12 Claims

Compounds having the formula:



wherein X is halogen and the non-toxic, pharmaceutically-acceptable inorganic and organic salts thereof. Antiinflammatory compositions consisting essentially of at least one of said compounds in admixture with a non-toxic, pharmaceutically acceptable carrier. A method for reducing inflammation of the tissues in mammals comprising administering a therapeutically effective comcentration of at least one of said compounds, preferably in admixture with a non-toxic pharmaceutically acceptable carrier.

3,773,713

THERMOSTABLE COMPOSITION OF VINYLIDENE FLUORIDE POLYMER

Shun Koizumi, Toyonaka, Takeshi Suzuki, Kyoto-fu, and Chuzo Okuno, Settsu, Japan, assignors to Daikin Koygo Co., Ltd., Osaka, Japan

No Drawing. Continuation of abandoned application Ser. No. 35,297, May 6, 1970. This application May 24, 1972, Ser. No. 256,258

Claims priority, application Japan, May 6, 1969, 44/35,059; Dec. 5, 1969, 44/98,130

Int. Cl. C08f *45/04, 45/26*
U.S. Cl. 260—30.2 22 Claims

A thermostable composition comprising 100 parts by weight of vinylidene fluoride polymer and 0.1 to 30 parts by weight of at least one glycidyl compound selected from the group consisting of glycidyl methacrylate polymers and glycidyl epoxy resins with or without a pigment and an organic solvent system. The film of the composition coated on a metal plate is highly and satisfactorily improved in the thermostability and the adhesive property, even when a pigment is contained therein.

3,773,714

SYNTHESIS OF CYCLIC ALUMINUM COMPOUNDS

Lawrence H. Shepherd, Jr., Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed Dec. 13, 1971, Ser. No. 207,518

Int. Cl. C07f *5/06*
U.S. Cl. 260—448 A 12 Claims

Nonionic organoaluminum compounds possessing an aluminacyclopentene moiety are formed by reacting an alkali metal 1,1-dihydrocarbylaluminacyclopent-3-enide with an aluminum trihalide or a hydrocarbyl aluminum halide, the reaction being conducted in the presence of a Lewis base.

3,773,715

FLAME RETARDANT LINEAR POLYESTERS

Theodore Largman, Morristown, Herman Stone, Convent Station, and Paul J. Koch, Mount Freedom, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,962

Int. Cl. C08g *51/58*
U.S. Cl. 260—45.85 R 11 Claims

Certain halogenated aromatic esters and trisubstituted phosphate esters in combination impart flame retardance to linear polyesters.

3,773,716

OLEFINIC POLYMERS STABILIZED WITH THIO-ACYL TRIVALENT PHOSPHORUS COMPOUNDS

Kenneth H. Rattenbury, Morgantown, W. Va., assignor to Weston Chemical Corporation, New York, N.Y.

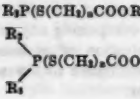
No Drawing. Substituted for abandoned application Ser. No. 884,014, Dec. 10, 1969. This application Aug. 22, 1972, Ser. No. 282,661

Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 18 Claims

Compounds are prepared having one of the formulae

$P(S(CH_2)_nCOOR_1)_3$,

$R_4P(S(CH_2)_nCOOR_1)_2$,



where n is an integer of 1, 2 or 3 and R_1, R_2 and R_3 are hydrocarbyl or halohydrocarbyl. The compounds are useful as stabilizers for olefin polymers.

3,773,717

RUBBER FORMULATION

James P. Shoffner, Elk Grove Village, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 852,473, Aug. 22, 1969, now Patent No. 3,634,318. This application Aug. 17, 1971, Ser. No. 172,567

Int. Cl. C08c *11/46, 11/54;* C08d *11/04*
U.S. Cl. 260—45.9 R 13 Claims

Rubber formulation comprising phenylenediamine antiozonant, N-aryl-benzothiazolesulfenamide and another accelerator of different chemical composition. This combination provides long scorch time and rapid cure, as well as flexibility in producing rubber products of desired physical properties.

3,773,718

METHOD FOR MAKING IMIDO-SUBSTITUTED AROMATIC POLYMERS

Johann F. Klebe and Thomas J. Windish, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Original application July 1, 1969, Ser. No. 838,322, now abandoned. Divided and this application Apr. 30, 1971, Ser. No. 139,209

Int. Cl. C08f *19/100;* C08g *33/02*
U.S. Cl. 260—47 ET 10 Claims

A Friedel-Crafts' alkylation method is provided for introducing imido-alkylene substitution, such as maleimidomethylene-substitution, into a variety of organic polymers having chemically-combined aromatic carbocyclic organic radicals, either in the polymer backbone such as polyarylenesulfones, polyaryleneoxides, polyarylenecarbonates, polyarylene esters, polyphenylene, etc., or as pendant radicals along the polymer chain, such as polystyrene, poly (styrene-vinylic or, dienic copolymers or terpolymers) etc. Reaction is effected between an imido-methylene compound and an organic polymer having chemically-combined aromatic carbocyclic organic radicals in the presence of a Friedel-Crafts' catalyst, such as boron trifluoride. The imido-alkylene-substituted aromatic carbocyclic organic polymers can be employed in making molding compounds, laminates, varnishes, etc.

3,773,719

2-AMINOXY-2'-ACYL-ACETANILIDE

Arthur Stempel, Teaneck, and Leo Henryk Sternbach, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Application Oct. 17, 1968, Ser. No. 768,514, which is a division of application Ser. No. 600,347, Dec. 6, 1966. now Patent No. 3,420,817, which in turn is a continuation-in-part of abandoned application Ser. No. 522,397, Jan. 24, 1966. Divided and this application Jan. 20, 1972, Ser. No. 219,546

Int. Cl. C07c *101/44*
U.S. Cl. 260—471 A 3 Claims

2-aminoxy-2'-acyl-acetanilides and N-(2-amino-X-phenylmethylene)aminoxyacetic acid lower alkyl esters (X=phenyl, alkyl and cycloalkyl) and substituted derivatives thereof. These compounds are intermediates in the preparation of 4,1,5-benzoxadiazocines (A) and known 1,4-benzodiazepines (B). A and B are useful as sedatives, muscle relaxants and anticonvulsant agents. A is also useful as intermediates in the preparation of B.

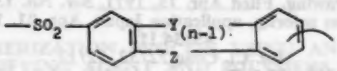
3,773,720

POLYARYLSULFONES

Herward A. Vogel, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed May 13, 1963, Ser. No. 280,088
Int. Cl. C08g 33/10
U.S. Cl. 260—49 9 Claims

1. A thermoplastic, film- and fiber-forming condensation polymer consisting essentially of repeating units of the formula



wherein Y is —O— or —S—, *n* is 1 or 2, and Z is —O—, —S— or —CH_2—.

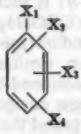
3,773,721

RAPID CURING RESIN COMPOSITIONS COMPRISING THE REACTION PRODUCT OF AN ALDEHYDE CONDENSATION POLYMER WITH A PRIMARY AROMATIC AMINE FURTHER REACTED WITH A CURING AGENT

George T. Tiedeman, Seattle, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

No Drawing. Continuation-in-part of application Ser. No. 113,680, Feb. 8, 1971, which is a continuation-in-part of application Ser. No. 821,996, May 5, 1969, both now abandoned. This application July 21, 1971, Ser. No. 164,927
Int. Cl. C08g 9/06
U.S. Cl. 260—51.5 45 Claims

This invention describes resin products having particular utility as rapid curing adhesives for wood and other materials, and processes for making the resin compositions. The reaction products are made by reacting an aldehyde condensation polymer, such as a phenol-formaldehyde condensation polymer, with a primary aromatic amine having the formula:

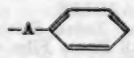


where:

X_1 is
—NH_2
—CH_2NH_2

X_2 is
—X_1
—OH
—alkoxy

X_3 is
—X_1
—COOH
—$NHCOCH_3$
—NO_2
—OH
—C_1 to C_5 alkyl
—H



—halogen
—halogenated alkyl
—alkoxy

X_4 is
C_1 to C_4 alkyl
—H
—aryl

and
A is

—SO_2—
—NH—
—O—
—S—
—C=C—
—S—S—
—N=N—

where Y_1 and Y_2 are hydrogen or alkyl radicals having from 1 to 3 carbon atoms and Z is an integer from 0 to 2,

to obtain an amine-modified polymer. On blending an appropriate hardening agent with the amine-modified polymer, the composition cures very rapidly at ambient temperature. When pieces of wood or other materials are spread with the preferred adhesives employing the resin compositions of this invention and brought into contact with another wood or other surface the bond strength develops within minutes.

3,773,722

SYNTHETIC ORGANIC POLYMERIC SUBSTANCES STABILIZED WITH ALKYLHYDROXYPHENYLALKANOYL-HYDRAZINES

Martin Dexter, Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Application Apr. 13, 1970, Ser. No. 28,048, now Patent No. 3,660,438, which is a continuation-in-part of abandoned application Ser. No. 811,664, Mar. 28, 1969. Divided and this application Mar. 3, 1972, Ser. No. 231,718
Int. Cl. C08f 45/56
U.S. Cl. 260—45.75 C 9 Claims

Novel alkylhydroxyphenylalkanoyl - hydrazine compounds are obtained by reacting an ester of an alkylhydroxyphenylalkanoic acid or the corresponding alkanoic acid chloride with either hydrazine or an acyl hydrazide. The alkylhydroxyphenylalkanoyl-hydrazines are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,773,723

THERMOSETTING RESINS COLOR STABILIZED WITH DIALKYL THIODIPROPIONATES

Harold F. Cole, Racine, Wis., assignor to The Dexter Corporation, Windsor Locks, Conn.

No Drawing. Filed Nov. 24, 1971, Ser. No. 201,972
Int. Cl. C08f 45/58
U.S. Cl. 260—45.85 S 9 Claims

Selected thermosetting resins are stabilized against discoloration by the addition of effective amounts of dialkyl thiodipropionates.

3,773,724

1,3,3-TRIMETHYL-BIS(α,t-BUTYLPEROXYISOPROPYL)-1-PHENYLINDANE

Frederick G. Schappell, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application Dec. 31, 1969, Ser. No. 889,685, now Patent No. 3,668,259, which is a continuation-in-part of abandoned application Ser. No. 741,850, July 2, 1968. Divided and this application Sept. 29, 1971, Ser. No. 184,955
Int. Cl. C08c 17/28; C08d 13/28; C08f 27/00
U.S. Cl. 260—46.5 G 8 Claims

1,3,3-trimethyl-bis(α-t-butylperoxyisopropyl)-1-phenylindanes in which the α-t-butylperoxyisopropyl groups are attached in the 6- and 4'-, 6- and 3'-, 5- and 4'-, 5'- and

3'-, 7- and 4'-, or 7- and 3'-positions are heated in contact with curable polymers whereby crosslinking of the polymer is effected.

3,773,725

COPOLYMERIC POLYAMIDE-ACIDS, AMIDE-IMIDES AND COPOLYIMIDES CONTAINING AZO LINKAGES AND PROCESS FOR THEIR PREPARATION

Imre Puskas, Chicago, and Ellis K. Fields, River Forest, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,648
Int. Cl. C08g 20/32
U.S. Cl. 260—47 CP 11 Claims

Copolymer compositions of the amide-imide variety are made by polymerizing primary diamines with azobenzenetetracarboxylic acid dianhydride and aromatic polycarboxylic acid anhydride comonomers. The polymers are linear, shapable, highly-soluble compositions which as formed contain amide acid groups. The polymers in dry powder form are useful for compression molding and in solution form are useful for adhesive coatings, porous material impregnating, casting films, preparing fibers and insulating coatings. The polymers are heat-modifiable converting to the imide form at elevated temperatures producing compositions having excellent solvent resistance, thermal stability and electrical properties.

3,773,726

METHOD FOR POLYMERIZING ALPHA, ALPHA-DIALKYL-BETA-PROPIOLACTONES IN POWDER FORM

Norbert Vollkommer and Herbert Klinkenberg, Troisdorf, Werner Trautvetter, Troisdorf-Spich, and Robert Büning, Troisdorf-Sieglar, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

Filed July 7, 1971, Ser. No. 160,569
Claims priority, application Germany, July 11, 1970, P 20 34 560.2
Int. Cl. C08g 17/17
U.S. Cl. 260—78.3 R 11 Claims

Polyesters in powder form are prepared by mass polymerization of beta-propiolactones utilizing intensive mixing to prevent agglomeration of the polymers and promote the formation of uniform particles. The mixing is best accomplished using a helical band stirrer that rotates in close proximity to the reactor wall.

3,773,727

PROCESS FOR PREPARING MALEIC ANHYDRIDE-CONJUGATED DIENE COPOLYMERS

Norman G. Gaylord, New Providence, N.J., assignor to Borg-Warner Corporation, Chicago, Ill.

No Drawing. Filed Mar. 31, 1972, Ser. No. 239,967
Int. Cl. C08f 5/04, 17/00
U.S. Cl. 260—78.5 BB 4 Claims

A process for preparing alternating copolymers of maleic anhydride and conjugated dienes wherein the copolymers are prepared from adducts of maleic anhydride.

3,773,728

COPOLYMERS OF FLUOROALKYL ETHERS AND MALEIC ANHYDRIDE

William L. Wasley, Berkeley, and Allen G. Pittman, El Cerrito, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Feb. 22, 1971, Ser. No. 117,777, now Patent No. 3,706,594. Divided and this application July 14, 1972, Ser. No. 271,894
Int. Cl. C08f 15/02, 27/04, 27/08
U.S. Cl. 260—78.5 R 10 Claims

Fluoroalkyl allyl (or methallyl) ethers are copolymerized with maleic anhydride. The copolymer products are useful for many purposes, including application to fibrous materials to provide both soil repellency and soil releasability.

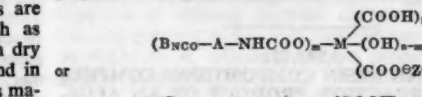
3,773,729

BLOCKED POLYURETHANES CONTAINING QUATERNARY AMMONIUM OR ALKALI METAL SALT GROUPS

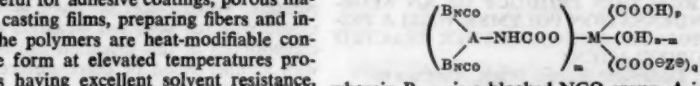
Saburo Wakimoto, Hyogo, Hideyoshi Tugukuni, Osaka, Masafumi Kano, Kyoto, Yutaka Matsui, Hyogo, and Seiju Kazama and Jugo Goto, Osaka, Japan; said Wakimoto, Tugukuni, and said Kano assignors to Dai Nippon Toryo Co., Ltd., said Matsui, Kazama and said Goto assignors to Takeda Chemical Industries, Ltd., both of Osaka, Japan

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,487
Claims priority, application Japan, Apr. 21, 1970, 45/34,114
Int. Cl. C08g 22/32, 22/12
U.S. Cl. 260—77.5 TB 2 Claims

The present invention is directed to a blocked isocyanate polymer of the general formula:



or (I)



(II)

wherein B_{NCO} is a blocked NCO group, A is a radical derived by removing all NCO groups from an organic diisocyanate in compound I or an organic triisocyanate in compound II, M is a radical derived by reducing all OH groups and carboxyl and its salt groups from a high molecular compound having a molecular weight of about 350 to about 30,000 and an acid value of about 30 to about 350 and containing n OH groups per molecule and carboxyl groups, about 40 to 100 mole percent of which are in the form of a quaternary ammonium salt or alkali metal salt, n and m are positive numbers of not less than 1, wherein $(2+n)$ in Formula I and $(3+n)$ in Formula II are both at least 5, whereas $n/2m$ in Formula I and $n/3m$ in Formula II are more than about 0.5, but less than about 4.0, Z is a quaternary ammonium cation or alkali metal cation, $(p+q)$ is such a number that a compound of $(HO)_n—M—(COOH)_{p+q}$ has an acid value of about 40 to about 150, and $q/(p+q)\times 100$ is 100 to about 40. The present invention, similarly, relates to a method of producing the aforementioned blocked isocyanate polymer type compounds. These compounds are useful as coating agents, adhesive agents and the like.

3,773,730

POLYMERS FROM OXAZOLIDINES AND UREA

Jerry Hoyt Hunsucker, Terre Haute, Ind., assignor to Commercial Solvents Corporation

No Drawing. Original appplication May 12, 1970, Ser. No. 36,679. Divided and this appplication Mar. 6, 1971, Ser. No. 232,311
Int. Cl. C08g 22/02, 51/24
U.S. Cl. 260—77.5 C 3 Claims

Prepolymeric resinous compositions from an oxazolidine and urea or melamine and a lower aliphatic aldehyde. The resinous compositions polymerize on heating and have utility in baking enamels and in electro-deposition formulations to increase the solvent resistance of the film.

3,773,731

METHOD OF HARDENING SYNTHETIC POLYMER WITH HETEROCYCLIC AZOLES

Reiichi Ohi, Takushi Miyazako, and Tadao Shishido, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed Dec. 28, 1971, Ser. No. 213,210
Claims priority, application Japan, Dec. 28, 1970, 46/120,541
Int. Cl. G03c 1/30; C08f 27/08
U.S. Cl. 260—79.5 NV 16 Claims

A method of hardening synthetic polymers containing primary amino groups by using a combination of at least

one metal ion and at least one compound represented by the general Formula I

wherein A and B are non-metallic atoms necessary to form a heterocyclic ring, Y is sulfur or selenium and X is an anion.

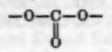
3,773,732

POLYMERIZATION PROCESS USING AN ESTER RAMIFYING AGENT AND POLYMERS THEREFROM

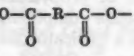
Jean-Paul Dillenschneider, Beaumont, France, assignor to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie, Clermont-Ferrand, Puy-de-Pome, France

No Drawing. Filed July 15, 1970, Ser. No. 55,274
Claims priority, application France, July 17, 1969, 6924444
Int. Cl. C08d *5/02, 5/04*
U.S. Cl. 260—85.1 11 Claims

Star-shaped homopolymers and copolymers of conjugated diene monomer and star-shaped copolymers of conjugated diene monomer with vinylaromatic monomer, having three or four branches and having satisfactory working and low cold flow properties, as well as vulcanizates thereof, having low hysteretic loss, can be prepared by the solution polymerization of the monomers with a monoalkaline anionic initiator or catalyst and treatment of the activated polymers and copolymers with a solution of an ester ramifying or branching agent having therein either a group



such as ethylene glycol carbonate, or a group



where R is a divalent saturated or unsaturated aliphatic or aromatic hydrocarbon radical, such as dimethyl terephthalate.

3,773,733

METHOD OF POLYMERIZING ISOOLEFIN

Shunsuke Matsushima, Ibaraki, Japan, assignor to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,397
Claims priority, application Japan, Dec. 29, 1970, 46/124,413
Int. Cl. C08d *1/16, 3/04;* C08f *3/14*
U.S. Cl. 260—85.3 R 13 Claims

A method for producing isoolefin homopolymers or copolymers is provided herein, which comprises polymerizing or copolymerizing an isoolefin, mixtures thereof, or a mixture of an isoolefin and multiolefin copolymerizable with an isoolefin in the presence of a catalyst system comprising (1) an aluminum-metal oxide-alkoxide compound represented by the general formula,

$$M[OAl(OR)_2]_2$$

wherein M is a divalent metal atom, R is an alkyl radical having from 1 to 8 carbon atoms, an aryl radical having from 6 to 10 carbon atoms, an aralkyl radical having from 7 to 12 carbon atoms, a cycloalkyl radical having from 6 to 10 carbon atoms, or a halogenated substituent thereof, and wherein R is the same or a different radical, and (2) boron trifluoride. The present invention is also directed to the above catalyst system, per se, useful for producing isoolefin polymers. By the use of the above catalyst, it is possible to produce isoolefin polymers at higher temperatures than possible with previously known catalyst systems.

3,773,734

ETHYLENE AND α-OLEFINS COPOLYMERS AND PROCESS FOR OBTAINING SAME

Salvatore Cucinella and Alessandro Mazzei, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

Filed Nov. 6, 1970, Ser. No. 87,497
Claims priority, application Italy, Nov. 7, 1969, 24,109/69
Int. Cl. C08f *15/04*
U.S. Cl. 260—88.2 R 7 Claims

Novel high molecular weight ethylene and α-olefin copolymers are disclosed which are amorphous at an ethylene mole content of up to 85% and are crystallizable when stretched. The induction of stretch crystallinity increases with the tensile stress and makes the copolymers particularly useful in the elastic fibers field.

3,773,735

PROCESS FOR THE MANUFACTURE OF POLYOLEFINS

Bernd Diedrich and Karl Diether Keil, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 656,358, July 27, 1967. This application Aug. 26, 1971, Ser. No. 175,319
Claims priority, application Germany, Aug. 9, 1966, F 49,907
Int. Cl. C08f *1/56, 3/06*
U.S. Cl. 260—88.2 R 5 Claims

A process for homopolymerizing ethylene or copolymerizing ethylene with up to 10% by weight of higher α-olefins having 3 to 15 carbon atoms in solution, suspension or in the gaseous phase at a temperature in the range of from 20 to 250° C. with a mixed catalyst comprising a trivalent, chlorine-containing titanium compound and an organo-aluminum compound, with regulation of the average molecular weight by means of hydrogen, which comprises carrying out the polymerization under a pressure below 10 atmospheres gauge, with regulation of the average molecular weight with hydrogen, using as catalyst 0.05 to 0.3 millimole of a trivalent chlorine containing titanium compound per liter of dispersing agent or solvent or per 0.5 liter of reactor volume and an organo-aluminum compound in an amount corresponding to 0.1 to 3.0 millimoles of aluminium per liter of dispersing agent or solvent or reactor volume, the organo-aluminum compound being

(a) an aluminum hydrocarbon of the formula AlR_3 in which R stands for a hydrocarbon radical having 4 to 40 carbon atoms, or

(b) a reaction product of a trialkylaluminum or an alkylaluminumhydride with diolefins having 4 to 20 carbon atoms.

3,773,736

WATER SOLUBLE CATIONIC THERMOSETTING POLY(N-CARBAMOYL)POLYALKYLENEPOLYAMINE RESINS AND WET STRENGTH PAPER CONTAINING THE SAME

Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, Norwalk, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of applications Ser. No. 471,463, July 12, 1965, now abandoned, and Ser. No. 745,486, July 17, 1968, now Patent No. 3,556,932. This application Jan. 18, 1971, Ser. No. 107,405
Int. Cl. C08g *9/08*
U.S. Cl. 260—68 5 Claims

A water-soluble polyalkylenepolyamine is provided with carbamoyl substituents by reaction with a cyanate or with urea, and then reacted with glyoxal. The resulting polymer is water-soluble cationic and thermosetting

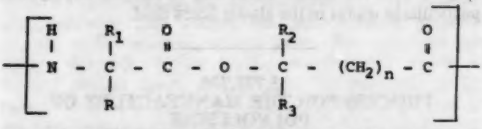
and produces paper of good initial wet strength but which loses much of its wet strength rapidly on normal weathering.

3,773,737
HYDROLYZABLE POLYMERS OF AMINO ACID AND HYDROXY ACIDS

Murray Goodman, Brooklyn, N.Y., and Gerald S. Kirshenbaum, Edison, N.J., assignors to Sutures, Inc., Coventry, Conn.

No Drawing. Filed June 9, 1971, Ser. No. 151,577
Int. Cl. C08c *20/30*
U.S. Cl. 260—78 A 19 Claims

Hydrolyzable film- and fiber-forming polymers having a plurality of repeating units of the formula:



wherein R is lower alkyl, aryl, alkaryl and aralkyl; R_1, R_2 and R_3 are each selected from H or lower alkyl with the proviso that at least one of R_1, R_2, R_3 is H; and *n* is an integer of 0 to 2.

3,773,738
POLYCARBONAMIDE PREPARATION WITH DIFFUSION OF VOLATILE BY-PRODUCTS

Kenneth Porter and Brian Richardson, Harrogate, England, assignors to Imperial Chemical Industries Limited, London, England

Original application Feb. 24, 1970, Ser. No. 13,727, now Patent No. 3,674,744. Divided and this application Dec. 10, 1971, Ser. No. 206,772
Claims priority, application Great Britain, Mar. 3, 1969, 11,140/69
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R 8 Claims

A process for the preparation of high molecular weight polymer by condensation process of a liquid reaction mixture wherein at least one volatile by-product is eliminated, characterized in that said condensation process is carried out in apparatus of such form and so operated that said reaction mixture being subjected to the condensation process has no free surface and removal of volatile product or products from said reaction mixture is effected by diffusion through at least a proportion of the wall of said apparatus which is permeable to said volatile product or products but not permeable to said reaction mixture or said polymer, said proportion of the wall which is permeable serving to separate said reaction mixture from a chemically inert gaseous fluid in which the partial pressure of the volatile by-product, or of the volatile by-products, is continually maintained below the equilibrium partial pressure for the reaction mixture under the conditions of reaction.

3,773,739
BASIC POLYAMIDES AND PROCESS FOR THEIR PREPARATION

Alberto Bonvicini, Terni, and Giuseppe Cantatore, Collescipoli, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Original application Sept. 29, 1970, Ser. No. 76,646, now Patent No. 3,668,278. Divided and this application Apr. 28, 1972, Ser. No. 248,630
Claims priority, application Italy, Oct. 1, 1969, 22,766/69; Oct. 2, 1969, 22,830/69
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 A 6 Claims

A new class of basic polyamides having a molecular weight between about 2000 and 200,000. The polyamides are prepared by first reacting an acrylic or methacrylic ester with a monoamine and then further reacting the obtained product with a polyamine. The polyamides are suitable for use as tinctorial modifiers for polymeric materials and particularly for crystalline polyolefins consisting essentially of isotactic macromolecules.

3,773,740
DEVOLATILIZATION METHOD

Ted T. Szabo, Martinsville, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 30,946, Apr. 22, 1970, which is a continuation-in-part of application Ser. No. 693,083, Dec. 26, 1967, both now abandoned. This application Oct. 21, 1971, Ser. No. 191,425
Int. Cl. C08f *7/04*
U.S. Cl. 260—93.5 A 4 Claims

A method is disclosed for enhancing the efficiency of separating volatiles from a viscous polymeric solution containing a polymer of styrene and volatile aromatic solvent comprising injecting water as a devolatilization aid into said polymeric styrene solution in an injection zone in an amount greater than 0.50 to about 2.75 weight percent (based on said styrene polymer), introducing the devolatilization aid-containing polymeric styrene solution into a devolatilization zone maintained at a pressure lower than that of said injection zone and at a temperature above the boiling point of said viscous polymeric styrene solution at such lower pressure to volatilize such volatile solvent and devolatilization aid, separating said volatilized constituents from said devolatilization zone to provide devolatilized styrene polymer, and removing the devolatilized styrene polymer from said devolatilization zone.

3,773,741
NUCLEATED POLYPROPYLENE

Dominic A. Berta, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Filed Mar. 20, 1972, Ser. No. 236,451
Int. Cl. C08f *29/02*
U.S. Cl. 260—93.7 2 Claims

The present invention relates to the nucleation of crystalline polymers of propylene. More particularly, it relates to a composition comprising a crystalline polymer of propylene and as a nucleator therefor a minor amount of potassium sulfate.

3,773,742
TETRANEOPENTYLTITANIUM AND USE AS POLYMERIZATION CATALYST

Walter M. Kruse, Wilmington, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Original application Feb. 2, 1971, Ser. No. 112,017, now Patent No. 3,712,874. Divided and this application May 22, 1972, Ser. No. 255,886
Int. Cl. C08f *1/30, 1/42, 3/06*
U.S. Cl. 260—94.9 B 8 Claims

A new and stable organotitanium compound, tetraneopentyltitanium, is described. This new tetraalkyltitanium can be used as the sole catalyst for the polymerization of 1-olefins or it can be used in combination with an activator such as an organo-aluminum compound, preferably a dialkylaluminum halide. It can also be extended on a solid support such as silica and used, with or without an activator, as the catalyst for olefin polymerizations.

3,773,743
PROCESS FOR IMPROVING THE COLOR OF ZIEGLER OLEFIN POLYMERS

Oliver C. Ainsworth, Jr., Joseph F. Lochary, and Shelton D. Stain, Jr., Baton Rouge, La., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Feb. 3, 1969, Ser. No. 796,153
Int. Cl. C08f *45/56, 45/58, 45/60*
U.S. Cl. 260—94.9 F 13 Claims

Polymers of olefins and/or other ethylenically unsaturated monomers containing metallic catalyst residues are stabilized against discoloration and degradation during and after high temperature processing by contacting the polymer with a hydroxyl compound, such as water,

and an organic base, such as triethanol amine, immediately prior to and/or concurrent with high temperature processing of the polymer.

3,773,744

NITROGLUCAGONS AND PROCESS FOR THEIR PREPARATION

William W. Bromer, Indianapolis, and Jefferson M. Patterson, Greenwood, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Filed Apr. 5, 1971, Ser. No. 131,437
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 5 Claims

Novel nitroglucagons exhibiting hyperglycemic biological activity and prepared by nitrating glucagon using tetranitromethane.

3,773,745

NUTRIENT PROTEIN FROM KERATINACEOUS MATERIAL BY EXTRACTION WITH DIMETHYLFORMAMIDE

William D. Goodwin, Decatur, Ga., assignor to The Athlon Corporation, Atlanta, Ga.

No Drawing. Filed July 30, 1971, Ser. No. 167,856
Int. Cl. A23j *1/10*
U.S. Cl. 260—123.7 9 Claims

Avian feathers, particularly chicken feathers are solubilized by treatment with N,N-dimethylformamide or an aqueous solution thereof to yield a nutrient protein composition or alteration which is suitable for use as a food supplement and as an ingredient in food products, such as baked goods, flour, cake mixes, confectionery, soups, cereals and noodle or pasta products.

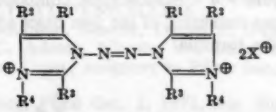
3,773,746

1,1'-AZO BIS(1H-IMIDAZO(1,2-a) PYRIDINIUM DIBROMIDE COMPOUNDS

David Jack, London, and Ernest Edward Glover, Middlesbrough, England, assignors to Allen & Hanburys Limited, London, England

No Drawing. Filed May 13, 1971, Ser. No. 143,210
Claims priority, application Great Britain, June 3, 1970, 26,812/70
Int. Cl. A61l *27/00*; C07c *115/00*
U.S. Cl. 260—140 13 Claims

There are provided compounds of the general formula



in which R^1–R^4 which may be the same or different represent lower alkyl, lower alkenyl, halogen, aralkyl or aryl in which the aryl group may be substituted with hydroxy, lower alkoxy, halogen, nitro or trifluoromethyl and in which any two adjacent groups R may together with 2 atoms of the imidazole ring form a 5, 6 or 7 membered carbocyclic or heterocyclic ring; and X represents a physiologically acceptable anion.

These compounds have a curare like neuromuscular blocking action.

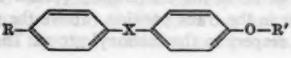
3,773,747

SUBSTITUTED AZOXY BENZENE COMPOUNDS

Ralf Steinsträsser, Darmstadt, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Nov. 20, 1970, Ser. No. 91,522
Claims priority, application Germany, Mar. 28, 1970, P 20 14 989.7
Int. Cl. C07c *105/00*
U.S. Cl. 260—143 46 Claims

Azo and azoxy compounds of the formula



wherein X is azo or azoxy, R is straight-chain alkyl of 1–8 carbon atoms, and R' is straight-chain alkyl or straight-chain alkanoyl, each of 1–10 carbon atoms, in pure form and mixtures thereof with each other and with other nematic or non-nematic compounds, have nematic liquid-crystalline phases at low temperatures and exhibit wide nematic mesophases. In their nematic phase, their light scattering property varies proportionately and reversably to the voltage applied thereto, which renders them useful in the production of display screens in nuclear resonance and electron resonance spectroscopy and as solvents for stereospecific chemical reactions.

3,773,748

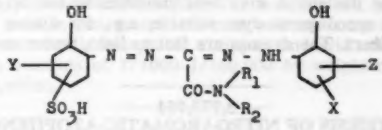
METAL COMPLEXES OF SUBSTITUTED CARBAMOYL FORMAZANES

Philippe Grandjean and Willy Steinemann, Basel, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Sept. 26, 1969, Ser. No. 861,450
Claims priority, application Switzerland, Sept. 27, 1968, 14,527/68; Oct. 16, 1968, 15,451/68
Int. Cl. C09b *45/48*
U.S. Cl. 260—149 10 Claims

ABSTRACT OF THE DISCLOSURE

Metal-containing formazane compounds which in the metal-free state have the formula



(I)

wherein X is halogen, each of Y and Z is hydrogen, halogen, nitro, alkyl or acylamino, R_1 is hydrogen or optionally substituted alkyl, R_2 is an optionally substituted aliphatic, cycloaliphatic or aromatic radical of the benzene series or R_1, R_2 and N form together a heterocyclic ring.

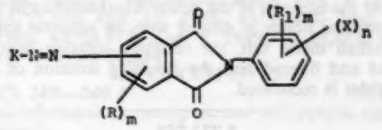
3,773,749

N-AMIDOPHENYLPHTHALIMIDE-AZO - 2 - HYDROXYNAPHTHOIC ACID-(3)-ARYLIDE, ACETOACETIC ACID ARYLIDE, PYRAZOLONE-(5), OR 5-AMINO PYRAZOLE DYESTUFFS

Walter Horstmann, Cologne-Buchheim, Edgar Siegel, Leverkusen-Steinbuechel, and Klaus Gerlach, Cologne-Flittard, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 7, 1969, Ser. No. 814,166
Claims priority, application Germany, Apr. 16, 1968, P 17 69 165.5; Aug. 23, 1968, P 17 95 211.3
Int. Cl. C09b *29/20, 29/22, 29/38*
U.S. Cl. 260—152 4 Claims

Sulphonic acid group-free monazo dyestuffs of the formula



in which K is the radical of a monofunctional coupling component; R and R_1 are the same or different substituents; X is optionally substituted carboxamide or acylamino group; *m* is an integer from 0–3; and *n* is the number 1 or 2; are disclosed. These pigment dyestuffs are useful in coloring paper, lacquers and synthetic materials,

e.g. in printing pastes and inks. These pigment dyestuffs are also distinguished by good fastness to light, solvents, migration and heat resistance.

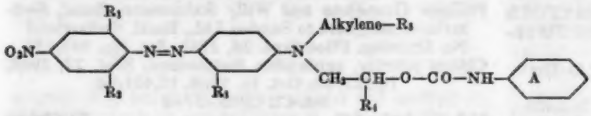
3,773,750

2,6-DIHALO - 4 - NITROPHENYL-AZO-PHENYL COMPOUNDS HAVING AN OPTIONALLY SUBSTITUTED PHENYLCARBAMOYLOXYALKYL SUBSTITUENT

Wolfgang Groebke, Oberwil, Basel-Land, and Roswitha Wirz, Liestal, Basel-Land, Switzerland, assignors to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,490
Claims priority, application Switzerland, Feb. 2, 1970, 1,423/70
Int. Cl. C07c *107/06;* C09b *29/08*
U.S. Cl. 260—207.1 **8 Claims**

Azo compounds of the formula



wherein

each of R_1 and R_2 is chlorine or bromine,
each of R_3 and R_4 is hydrogen or methyl,
R_5 is hydrogen or cyano

and the nucleus A may bear substituents, but no SO_3H group, are disperse dyes suitable, e.g., for dyeing polyester fibers. The dyeings are fast to light, water and solvents.

3,773,751

SYNTHESIS OF NITROAROMATIC-AZOPHENOLS

Houston George Brooks, Jr., Somerset, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Sept. 8, 1969, Ser. No. 856,210
Int. Cl. C07c *107/06*
U.S. Cl. 260—206 **9 Claims**

A process for coupling an o-nitroaniline and a water immiscible para-alkylphenol in an aqueous basic reaction medium to obtain a nitrophenylazophenol. The novel features of the process are the presence of an inert water immiscible solvent and the use of a sparingly soluble base. Typically, o-nitroaniline and p-t-octylphenol are coupled in a reaction system having separate aqueous and naphtha phases and excess calcium hydroxide, some of which is in the undissolved solid state. The resultant azophenols are in pure form and can be used to prepare 2-(hydroxyphenyl)benzotriazoles.

3,773,752

RECOVERY OF MICROBIAL POLYSACCHARIDES

Ben B. Buchanan and John E. Cottle, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Filed Feb. 25, 1971, Ser. No. 118,946
Int. Cl. C12d *13/04*
U.S. Cl. 260—209 R **10 Claims**

A method of recovering microbial polysaccharides produced from the fermentation of carbohydrates by the action of the bacteria of the genus Xanthomonas in which the fermentor liquor is diluted with an aqueous solution of an alkali metal salt, the resulting solution being coagulated and filtered and the resulting solution of polysaccharides is recovered.

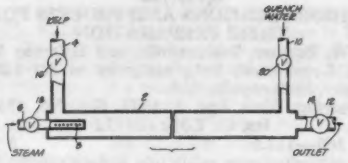
3,773,753

PROCESS FOR PRODUCTION OF ALGINATES

Gerald D. Wright and John P. Arendt, San Diego, Calif., assignors to Kelco Company, San Diego, Calif.

Filed Jan. 10, 1972, Ser. No. 216,369
Int. Cl. C08b *19/10*
U.S. Cl. 260—209.6 **8 Claims**

An improved extraction procedure for removing alginic acid from kelp. The kelp in a comminuted form in admixture with water is passed through an extractor under conditions which approximate plug flow. The comminuted



kelp is introduced to the extractor in admixture with sodium carbonate and water where it is then immediately heated to a temperature of about 190 to about 270° F. by pressurized steam. The residence time of the materials within the extractor ranges from about 10 to about 40 minutes. By providing conditions which produce essentially plug flow within the extractor, all of the material passing through the extractor is subjected to substantially the same conditions to produce on a continuous basis a product having generally uniform characteristics.

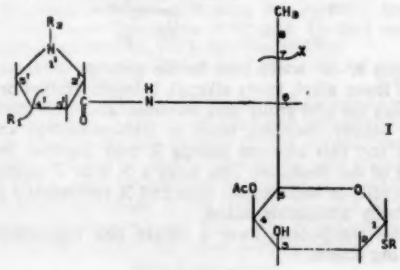
3,773,754

ORGANIC COMPOUNDS

Walter Morozowich and Thomas O. Oesterling, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 861,195, Sept. 25, 1969. This application Sept. 22, 1971, Ser. No. 182,874
Int. Cl. C07c *47/18*
U.S. Cl. 260—210 R **23 Claims**

This invention relates to novel processes for preparing lincomycin - 4 - monoacylate compounds and 7-halogenated lincomycin - 4 - monoacylate compounds, selected from the group consisting of the free bases and acid addition salts of the formula:



I

wherein R is alkyl of from one through six carbon atoms; R_1 is alkyl of from one through eight carbon atoms, cycloalkyl of from three through eight carbon atoms, or aralkyl of up to twelve carbon atoms; R_2 is alkyl of from one through eight carbon atoms or hydrogen; X is hydroxy, chlorine, bromine or iodine; and Ac is the acyl radical of a hydrocarbon carboxylic acid containing from two through eighteen carbon atoms. In the above Formula I, the vertical wavy line ~ is used to indicate that the group R_1 can be in the cis position (below the plane of the ring) or in the trans position (above the plane of the ring), with respect to the carbonyl group. The horizontal

wavy line ~ is used to indicate that both epimers are to be included in the group, the 7-(R) (or D-erythro) configuration and the 7-(S) (or L-threo) configuration. These lincomycin-4-monoacylate compounds and their 7-halo counterparts embraced by Formula I, above, can be used as antibacterial agents, for example to inhibit the growth of *Staphylococcus aureus* and *Sarcina lutea* on dental and medical equipment contaminated with these organisms.

3,773,755

CONVERSION OF CYTIDYLIC ACID INTO ARACYTIDINE-3'-PHOSPHATE

Joseph Nagyvary, Byran, Tex., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

No Drawing. Continuation-in-part of application Ser. No. 868,913, Oct. 23, 1969. This application Dec. 9, 1970, Ser. No. 96,648

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R **7 Claims**

A method for synthesizing aracytidine-3'-phosphate by the low temperature rearrangement of substituted cytidine-2',3' cyclic pyrophosphates is described.

3,773,756

NOVEL PREPARATION OF SUBSTITUTED COBAMIDES

Lucien Penasse and Pierre Barthelemy, Paris, France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,482

Claims priority, application France, Oct. 6, 1970, 7035985

Int. Cl. C07d *55/62*

U.S. Cl. 260—211.7 **10 Claims**

A process for the preparation of analogs of vitamin B_{12} wherein a hydrocarbon radical R is attached to the cobalt atom by reacting a Co—Z cobamide wherein Z is an anion-forming group with a metallic or metalloid derivative of R.

3,773,757

PROCESS FOR THE PREPARATION OF α-CARBOXYARYLMETHYL- AND α-CARBOARYLOXYARYLMETHYL PENICILLINS

Irving M. Goldman, Niantic, Daniel P. O'Shea, Groton, Richard C. Adams, Niantic, and Susumu Nakanishi, East Lyme, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,909

Int. Cl. C07d *99/16*

U.S. Cl. 260—239.1 **7 Claims**

The efficient preparation of α-carboxyarylmethyl- and α-carboaryloxyarylmethyl penicillins by acylation of aqueous solutions of 6-aminopenicillanic acid with ether solutions of arylmalonic acid-half acid chlorides and an arylmalonic acid-half ester-half acid chloride is described.

3,773,758

7α-CYANO - 17 - HYDROXY-3-OXO-17α-PREGN-4-ENE-21-CARBOXYLIC ACID γ-LACTONE AND RELATED COMPOUNDS

Richard M. Weier, Deerfield, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,157

Int. Cl. C07c *173/00*

U.S. Cl. 260—239.57 **6 Claims**

7α - cyano - 17 - hydroxy - 3 - oxo - 17α-pregn-4-ene-21-carboxylic acid γ-lactone and related 7α-cyano steroids are described. They possess diuretic activity of the aldosterone-antagonist type. The 7α-cyano-3-keto-Δ^4 lactones are prepared by reacting the corresponding 3-keto-$\Delta^{4,6}$ steroids with potassium cyanide and can function as starting materials for the remaining compounds.

3,773,759

1-ARYLIDENEAMINO-4-(2-OXO-3-PHENYL-3-BENZOFURYL)PIPERAZINES

John W. Cusic, Skokie, Charles R. Ellefson, Chicago, and Ernest F. Levon, Evanston, Ill., assignors to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Aug. 21, 1972, Ser. No. 282,545

Int. Cl. C07d *51/70*

U.S. Cl. 260—240 G **6 Claims**

The hydrazones which result from condensation of 1-amino-4-(2-oxo-3-phenyl - benzofuryl)piperazine with arylcarboxaldehydes have pharmacological properties, thus are anti-convulsant agents, bradykinin antagonists, prostaglandin E_2 antagonists, and central nervous system affective agents.

3,773,760

2-AMINOPYRIMIDINE ETHYLMERCURITHIOSALICYLATE

Charles Pilet, 8 Avenue du Buisson, Parc Saint-Maur, France, and Dominique Bocher, 11 Rue du Moulin Vert, Paris, France

No Drawing. Filed May 4, 1972, Ser. No. 250,247

Claims priority, application France, May 6, 1971, 16,414

Int. Cl. C07d *51/42*

U.S. Cl. 260—242 **3 Claims**

2-aminopyrimidine ethylmercurithiosalicylate is prepared by reacting ethylmercurithiosalocylic acid with 2-aminopyrimidine under reflux. The resulting salt is effectively used in pharmaceutical compositions comprising a pharmaceutically acceptable excipient and said salt present in amounts of 1/1000–1/100,000 by weight of said composition.

3,773,761

PROCESS FOR PREPARING DESACETOXYCEPHALOSPORANIC ACIDS FROM CEPHALOSPORANIC ACIDS

Dale W. Blackburn, Moorestown, N.J., Robert F. Devenney, Newtown Square, Pa., and John J. Mlynarski, Oaklyn, N.J., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Feb. 22, 1971, Ser. No. 117,691

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **9 Claims**

A process for the preparation of desacetoxycephalosporanic acids with palladium oxide hydrate optionally supported on an inert carrier and palladium oxide hydrate supported on alpha-cellulose which is useful in the process.

3,773,762

2-INDOLYLACETIC ACID DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Masaru Nakao, Osaka, Shigenari Katayama, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Ltd., Osaka, Japan

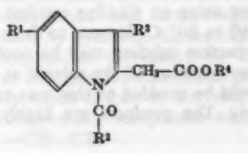
No Drawing. Continuation of abandoned application Ser. No. 861,449, Sept. 26, 1969. This application July 19, 1971, Ser. No. 164,125

Claims priority, application Japan, Oct. 8, 1968, 43/73,372; Oct. 15, 1968, 43/75,447; Mar. 31, 1969, 44/24,975; Apr. 1, 1969, 44/25,452; May 14, 1969, 44/37,204

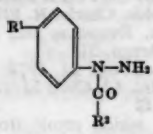
Int. Cl. C07d *27/56*

U.S. Cl. 260—240 J **4 Claims**

Anti-inflammatory, analgesic and anti-pyretic agents of the formula,



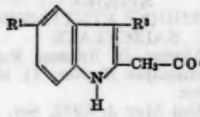
are produced by reacting an N^1-acylphenylhydrazine derivative of the formula,



or a salt thereof, with a keto acid derivative of the formula,

$$R^3—CH_2—CO—CH_2—COOR^4$$

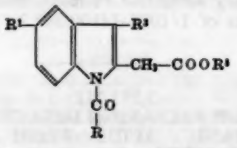
or reacting a 2-indolylacetic acid ester derivative of the formula,



with an acyl halide derivative of the formula,

$$R^2—CO—Y$$

and further, if necessary, reacting the thus obtained N-substituted 2-indolylacetic acid ester of the formula,



with hydrogen or an acid, in the above formulae R^1 being hydrogen, halogen, alkyl having up to 3 carbon atoms or alkoxy having up to 3 carbon atoms; R^2 being styryl, unsubstituted or halogen-, lower alkyl- or methylenedioxy-substituted phenyl, or unsubstituted or halogen- or lower alkyl-substituted heterocyclic five- or six-membered ring containing nitrogen, oxygen or sulfur atom; R^3 being hydrogen or alkyl having up to 4 carbon atoms; R^4 being hydrogen, alkyl having up to 4 carbon atoms, benzyl or 2-tetrahydropyranyl; R^5 being the same alkyl, benzyl or 2-tetrahydropyranyl as identified for R^4; and Y being halogen. These agents are novel compounds excluding those in which R^2 is halogen- or lower alkyl-substituted phenyl.

3,773,763

SUBSTITUTED s-TRIAZINE FORMALDEHYDE ADDUCTS

Rodney Lee Wells, Chester, Harry Edwards Ulmer, Hopewell, and Paul James Mason, Chester, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Original application Dec. 10, 1969, Ser. No. 884,000, now Patent No. 3,697,249. Divided and this application May 22, 1972, Ser. No. 255,627

Int. Cl. C07d *55/48*

U.S. Cl. 260—249.8 **3 Claims**

Novel 2-alkylamino-4-amino-6-chloro-s-triazine-formaldehyde adducts are prepared by reacting a 2-alkylamino-4-amino-6-chloro-s-triazine with formaldehyde in an inert organic solvent using an alkaline catalyst. Reaction temperatures of 60 to 80° C. for one to three hours are preferred. The reaction mixture may be cooled to separate the product; evaporation of the solvent at advanced temperatures should be avoided as this may cause formation of by-products. The products are highly selective herbicides.

3,773,764

HYDRAZONE DYESTUFFS

Klaus-Friedrich Lehment, Leverkusen, Ernst Schmitt, Cologne, and Roderich Raue, Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

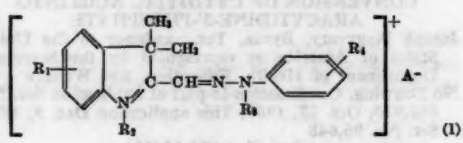
No Drawing. Filed June 23, 1971, Ser. No. 156,072

Claims priority, application Germany, June 24, 1970, P 20 31 202.1

Int. Cl. C07d *27/38*

U.S. Cl. 260—240 G **11 Claims**

Hydrazone dyestuffs of formula



(I)

wherein R_1 and R_4 represent hydrogen, halogen, lower alkyl, cycloalkyl, lower alkoxy, nitro, carbalkoxy, nitrile, acyl or aralkyl, and at least one of the substituents R_1 and R_4 represents aralkyl, R_2 represents lower alkyl, cycloalkyl, aralkyl or aryl, R_3 represents alkyl and A^- represents an anion, and wherein the alkyl radicals and the aromatic carbocyclic rings are not further substituted or contain further non-ionic substituents, processes for their manufacture and their use for dyeing and printing of polymerised or copolymerised acrylnitrile, acid-modified polyester fibres and polamide fibres.

3,773,765

s-TRIAZINO[1,2-a][1,4]BENZODIAZEPINE-1,3-(2H,4H AND 2H,5H)DIONES

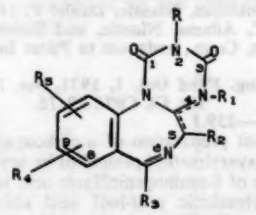
Robert Bruce Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,907

Int. Cl. C07d *55/12*

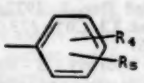
U.S. Cl. 260—248 NS **15 Claims**

s-Triazino[1,2-a][1,4]benzodiazepine-1,3(2H,4H and 2H,5H)diones of the general formula



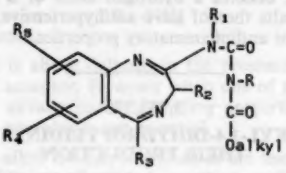
(X)

in which R and R_1 are H, alkyl or alkenyl of 1 to 4 carbons; R_2 is H, or alkyl of 1 to 3 carbons, OH, lower alkanoyloxy of 2 or 3 carbon atoms and alkoxy of 1 to 3 carbon atoms; R_3 is 2-, 3- or 4-pyridyl, 2-pyrimidyl, furyl, pyrryl, thenyl, cycloalkyl with 5 to 7 carbons, cycloalkenyl with 5 to 7 carbons or



R_4 and R_5 are each H, alkyl of 1 to 3 carbons, halogen, nitro, cyano, trifluoromethyl, alkoxy of 1 to 3 carbons, alkylthio of 1 to 3 carbons, alkyl sulfinyl of 1 to 3 carbons, alkyl sulfonyl of 1 to 3 carbons, amino, alkanoyl-

amino of 2 or 3 carbons, or dialkylamino with 1- to 3-carbon alkyls; are made by heating a compound:



to effect ring closure.

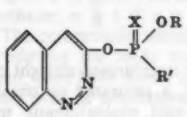
3,773,766

CINNOLINYL(THIONO)PHOSPHORIC(PHOSPHONIC) ACID ESTERS AND ESTER AMIDES

Karl-Julius Schmidt, Wuppertal-Vohwinkel, Ingeborg Hammann, Cologne, and Günther Unterstenhöfer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,148
Claims priority, application Germany, Sept. 18, 1970, P 20 46 088.2
Int. Cl. C07d *51/08*
U.S. Cl. 260—250 A 7 Claims

Cinnolinyl(thiono)phosphoric(phosphonic) acid esters and ester amides of the general formula



in which

X is oxygen or sulfur,
R is an alkyl radical with up to 6 carbon atoms, and
R′ is an alkyl or alkoxy radical with up to 6 carbon atoms or a lower alkylamino radical, where each lower alkylamino radical has 1 to 4 carbon atoms,

which possess insecticidal, acaricidal, fungicidal, and bactericidal properties.

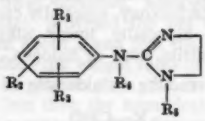
3,773,767

N-(HYDROXY- OR METHOXY-ALKYL) - 2 - [N′-(HYDROXY OR METHOXY-ALKYL)-PHENYLAMINO]-IMIDAZOLINES - (2) AND SALTS THEREOF

Helmut Stähle, Werner Kummer, Herbert Köppe, and Hans-Wolfgang Samtleben, Ingelheim am Rhein, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhein, Germany

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,263
Claims priority, application Germany, Apr. 6, 1970, P 20 16 290.7
Int. Cl. C07d *49/34*
U.S. Cl. 260—254 8 Claims

Compounds of the formula



wherein

R_1, R_2 and R_3, which may be identical to or different from each other, are each hydrogen, chlorine, fluorine, bromine, cyano, trifluoromethyl, alkyl of 1 to 3 carbon atoms or alkoxy of 1 to 3 carbon atoms, and

R_4 and R_5, which must be different from each other, are each hydrogen or

$$-C_nH_{2n+1-x}(OR)_x$$

where

R is hydrogen or methyl,
n is an integer from 1 to 6, inclusive, and
x is an integer from 1 to 3, inclusive,

and non-toxic, pharmacologically acceptable acid addition salts thereof; the compounds as well as the salts are useful as hypotensives.

3,773,768

7 - AMINO - 2 - CHLORO-11-(4-METHYL-1-PIPERAZINYL)DIBENZ[b,f][1,4]OXAZEPINE AND SALTS THEREOF

Charles Frederic Howell, Upper Saddle River, N.J., and Eugene Newton Greenblatt, Spring Valley, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 220,371, Jan. 24, 1972, now Patent No. 3,705,245, which is a continuation-in-part of application Ser. No. 84,221, Oct. 26, 1970, now Patent No. 3,660,406. This application Aug. 11, 1972, Ser. No. 280,033
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 8 Claims

Preparation of 7-amino-2-chloro-11-(4-methyl-1-piperazinyl)dibenz[b,f][1,4]oxazepine and pharmaceutically acceptable acid addition salts by several methods is described. These compounds are useful for their effects on the central nervous system such as tranquilizers and antidepressants.

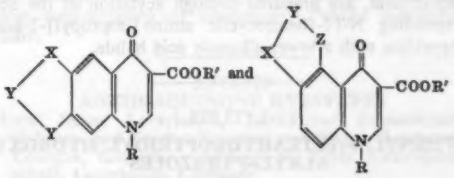
3,773,769

TETRAHYDRO-OXOFUROQUINOLINE CARBOXYLIC ACID DERIVATIVES

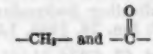
Rudolf Albrecht, Hans-Joachim Kessler, and Eberhard Schroder, Berlin, Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Germany

No Drawing. Filed June 15, 1971, Ser. No. 153,406
Claims priority, application Germany, June 18, 1970, P 20 30 899.0
Int. Cl. C07d *33/48*
U.S. Cl. 260—287 R 18 Claims

Quinolinecarboxylic acid compounds of the formulae



wherein R and R′ each are H or alkyl and one of X, Y and Z is —O— and the others are members of the group, consisting of



including the acid addition salts thereof, are highly effective against staphylococci and Gram-Negative bacteria. They are produced by cyclizing the corresponding dicarboxylic acid compounds thermally; by cyclizing with POCl to form an intermediate chlorinated quaternary ammonium chloride which is then hydrolyzed; or by hydrogenating the corresponding compounds wherein X and Y or Y and Z are —CH=CH—.

3,773,770

PROCESS FOR PREPARING PYRIDINE N-OXIDE CARBANION SALTS AND DERIVATIVES THEREOF

Ralph A. Damico, Colerain Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed Sept. 30, 1968, Ser. No. 763,941

Int. Cl. C07d *31/02*

U.S. Cl. 260—290 R 7 Claims

Process for preparing 2-pyridine N-oxide carbanion salts, 2-pyridinethiol N-oxides, salts thereof and 2,2'-dithiopyridine N,N'-dioxides which comprises the steps of (1) heating an alkali metal or alkaline earth metal salt of an α-picolinic acid at from 80° C. to about 150° C. to form a pyridine N-oxide carbanion salt and (2) reacting the carbanion salt formed thereby with a sulfur-containing compound.

3,773,771

N-ALKANOYL-N-[1-(HETEROCYCLIC AMINO) ISOPROPYL]-2-AMINOPYRIDINES

Rudolf Hiltmann, Hartmund Wollweber, and Friedrich Hoffmeister, Wuppertal-Elberfeld, and Hans-Gunther Kroneberg, Wuppertal-Vohwinkel, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation-in-part of applications Ser. No. 82,838, Oct. 21, 1970, and Ser. No. 113,053, Feb. 5, 1971. Ser. No. 82,838 being a continuation-in-part of application Ser. No. 761,795, Sept. 23, 1968, and Ser. No. 113,053 being in turn a continuation of application Ser. No. 761,323, Sept. 20, 1968, all now abandoned. This application Dec. 27, 1971, Ser. No. 212,749

Claims priority, application Germany, Sept. 25, 1967, F 53,580, F 53,582

Int. Cl. C07d *29/10, 31/44*

U.S. Cl. 260—293.69 10 Claims

N-(lower alkanoyl)-N-[1-(heterocyclic amino)isopropyl]-2-aminopyridines in which the heterocyclic amino group is a 2- or 3-methylpiperidino group optionally bearing a second methyl group in the 2-, 3- or 5-position or hexahydroazepin-1-yl optionally bearing one or two methyl groups in the 2- and/or 3-position, are analgesic agents. The compounds, of which N-propionyl-N-[1-(2-methylpiperidino)isopropyl]-2-aminopyridine is a representative embodiment, are prepared through acylation of the corresponding N-[1-(heterocyclic amino)isopropyl]-2-aminopyridine with a lower alkanoic acid halide.

3,773,772

1-PHENYL, 4-(TETRAHYDROPYRIDYL, HYDROXYALKYL)-PYRAZOLES

Vishwa Prakash Arya, Bombay, India, assignor to Ciba-Geigy AG, Basel, Switzerland

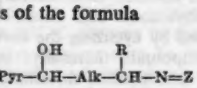
No Drawing. Original application Feb. 13, 1968, Ser. No. 705,013, now Patent No. 3,652,573. Divided and this application Sept. 21, 1971, Ser. No. 182,545

Claims priority, application Switzerland, Mar. 1, 1967, 2,975/67; Jan. 24, 1968, 1,061/68

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 R 7 Claims

The compounds of the formula



in which N=Z denotes an N-azacycloaliphatic residue containing 5–8 ring members and at most one carbon-carbon double bond, Pyr denotes a 4-pyrazolyl residue substituted in 1-position by an optionally substituted phenyl group, Alk represents a 1:1-lower alkylidene residue, and R denotes a hydrogen atom or a lower alkyl group, or salts thereof have antihypertensive, as well as antitussive or antiinflammatory properties.

3,773,773

N-ALKYL-1,4-DIHYDROPYRIDINES AND THEIR PRODUCTION

Friedrich Bossert, Wuppertal-Elberfeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

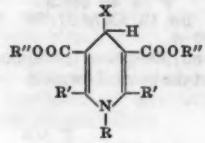
No Drawing. Continuation of abandoned application Ser. No. 35,574, May 7, 1970. This application Nov. 22, 1971, Ser. No. 201,152

Claims priority, application Germany, May 10, 1969, P 19 23 990.8

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 D 6 Claims

N-alkyl-1,4-dihydropyridines of the formula:



wherein

R is a saturated or unsaturated straight or branched chain aliphatic moiety, a saturated or unsaturated cyclo aliphatic moiety, said cycloaliphatic moiety having an N, S or O heteroatom, said cycloaliphatic moiety or said cycloaliphatic moiety having an N, S, or O heteroatom substituted by carboxy, carbalkoxy, alkoxy, especially lower alkoxy, alkylmercapto, especially lower alkylmercapto, alkylamino, especially lower alkylamino, or dialkylamino, especially di-lower alkylamino, an araliphatic moiety or an araliphatic moiety substituted by alkyl, especially lower alkyl, alkoxy, especially lower alkoxy, nitro or halogen,

R' is hydrogen or straight or branched chain alkyl of 1 to 4 carbon atoms, aryl, aryl substituted by alkyl, especially lower alkyl, nitro or halogen, or a heterocycle,

R'' is a saturated or unsaturated, straight or branched chain aliphatic moiety of 1 to 6 carbon atoms, a saturated or unsaturated cycloaliphatic moiety or said cycloaliphatic moiety having an N, S or O heteroatom, and

X is a saturated or unsaturated, straight or branched chain aliphatic or isocyclic moiety, a heterocycle, aryl, aryl substituted by alkyl, especially lower alkyl, alkoxy, especially lower alkoxy, carbalkoxy, especially carb-lower alkoxy, alkylmercapto, especially lower alkylmercapto, trifluoromethyl, nitrile, nitro or halogen, aralkyl, aralkylene or aralkyl or aralkylene substituted by alkyl, especially lower alkyl, alkoxy, especially lower alkoxy, carbalkoxy, especially carb-lower alkoxy, alkylmercapto, especially lower alkylmercapto, trifluoromethyl, nitrile, nitro or halogen,

are produced by reacting an aldehyde of the formula:

X—CHO

wherein

X is as above defined with a β-ketocarboxylic acid ester of the formula:

R'—CO—CH_2—COOR''

wherein

R' and R'' are as above defined with a salt of an alkylamine of the formula:

$$R—NH_2$$

wherein

R is above defined, in the presence of an acid acceptor. However when one of the reactants already has acid-binding properties, the acid acceptor is not essential.

These N-alkyl-1,4-dihydropyridines are useful for their coronary dilating effect and are also useful as blood pressure depressing agents.

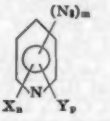
3,773,774

PYRIDYL AZIDES AND DERIVATIVES THEREOF

Calvin E. Pannell, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,975
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 **3 Claims**

The invention is a group of compounds of the formula



wherein X is halogen; Y is nitrile, carboxamide, carboxyl, ester or trihalomethane; m is 1–4; n is 0–4; p is 0–2; and $m+n+p$ is 2–5. The compounds, which generally may be prepared by introducing the azide moiety by exchange with a ring halogen, have been found to be useful as high energy compounds, such as detonators.

3,773,775

BIS-QUATERNARY PYRIDINIUM SALTS

Ilse Hagedorn, Darmstadt, Germany, assignor to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Aug. 27, 1968, Ser. No. 755,752
Int. Cl. C07d *31/40*
U.S. Cl. 260—295.5 A **3 Claims**

(2 - hydroxyiminomethylpyridinium - 1 - methyl) - (R-pyridinium-1-methyl) ethers, wherein R is either hydrogen, methyl, methoxycarbonyl, aldoxime or aminocarbonyl, are useful as pharmaceuticals for treating and alleviating symptoms of poisoning caused by phosphorus-containing plant-protective agents and war gases.

3,773,776

AQUEOUS ACIDIC POLYVINYL ALCOHOL-SILICA SOLUTION

Ralph K. Iler, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 31, 1971, Ser. No. 129,819
Int. Cl. C08f *45/24*
U.S. Cl. 260—29.6 B **4 Claims**

Compositions of colloidal silica having the average particle size diameter of 4–30 nanometers and of polyvinyl alcohol form coherent, homogeneous films that are water-resistant, provided the pH of such compositions is less than about 6 and that the following requirements are satisfied: the weight ratio of silica to the polyvinyl alcohol is greater than the numerical value of $0.0062\ d.^2$ but less than the numerical value of 0.25 d., where d. is the average particle diameter of the colloidal silica expressed in nanometers; but this ratio is always at least 0.22. The silica/polyvinyl alcohol films obtained in this manner are useful for greaseproofing and waterproofing paper and paper articles and for rendering surfaces slip-resistant.

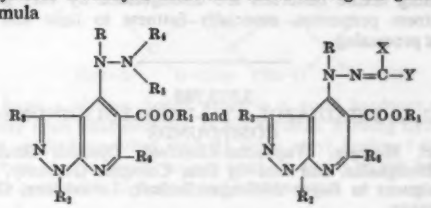
3,773,777

HYDRAZONES OF PYRAZOLOPYRIDINE CARBOXYLIC ACIDS AND ESTERS

Hans Hoehn, Tegernheim, Germany, and Mark Chasin, Englishtown, N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Continuation-in-part of application Ser. No. 42,415, June 1, 1970, which is a continuation-in-part of application Ser. No. 833,672, June 16, 1969, both now abandoned. This application Dec. 15, 1971, Ser. No. 208,449
Int. Cl. C07d *31/36*
U.S. Cl. 260—295.5 B **16 Claims**

New hydrazines, hydrazides and hydrazones of pyrazolopyridine carboxylic acids and esters having the general formula



and salts thereof which are antimicrobial agents and central depressants are the subject of this invention.

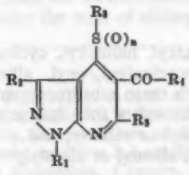
3,773,778

SULFUR DERIVATIVES OF PYRAZOLO [3,4-b]PYRIDINES

Hans Hoehn, Tegernheim, and Theodor Denzel, Nuremberg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,373
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 C **8 Claims**

New sulfur derivatives of pyrazolo[3,4-b]pyridines having the general formula



and also their salts, are useful as central nervous system depressants. These compounds also increase the intracellular concentration of adenosine-3',5-cyclic monophosphate.

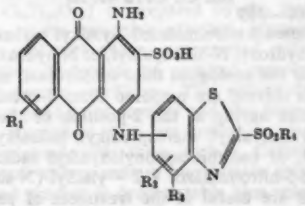
3,773,779

ANTHRAQUINONE DYESTUFFS

Horst Jager, Leverkusen, Karl-Heinz Schundehutte, Opladen, and Kersten Trautner and Walter Horstmann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Mar. 22, 1971, Ser. No. 126,976
Claims priority, application Germany, Mar. 28, 1970, P 20 14 157.9
Int. Cl. C07d *91/44*
U.S. Cl. 260—303 **6 Claims**

Anthraquinone dyestuffs which in the form of the free acid correspond to the formula



wherein

R_1 denotes a hydrogen atom, a hydroxyl group, a halogen atom or a sulpho group,
R_2 denotes a hydrogen atom or a substituent,
R_3 denotes a hydrogen atom or a sulpho group, and
R_4 denotes an optionally substituted alkyl, aralkyl or aryl group,

and their use for the dyeing and printing of cellulose-containing materials, such as native and regenerated cellulose. The new dyestuffs are also suitable for dyeing materials containing amide groups, such as wool, silk and synthetic polyamides. Dyeings obtained on cellulose-containing textile materials are distinguished by very good fastness properties, especially fastness to light and to wet processing.

3,773,780
1-(1,3,4-THIADIAZOL-2-YL)-IMIDAZOLIDINONE-(2) COMPOUNDS
Carl Metzger, Wuppertal-Elberfeld, Dietrich Rucker, Bietigheim, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany
No Drawing. Filed Mar. 10, 1971, Ser. No. 123,012
Int. Cl. C07d *99/10*
U.S. Cl. 260—306.8 D **18 Claims**

Certain 1-(1,3,4-thiadiazol-2-yl)-imidazolidinone - (2) compounds of the formula:

in which

R is hydrogen, alkyl, haloalkyl, cycloalkyl, alkoxy, alkoxyalkyl, halocycloalkyl, aryl, alkenyl, alkyny or a radical in which these substituents are linked to the nitrogen atom through a thia-linkage which may be oxidized to sulfonyl or sulfoxy; and
R_1 is lower alkyl, alkenyl or alkynyl;

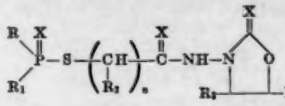
are outstandingly potent herbicides and exhibit particularly selective action.

3,773,781
1-SUBSTITUTED-5-NITROIMIDAZOL-2-YLALKYL-(N-SUBSTITUTED)-CARBAMATES
John A. Carlson, Nassau, N.Y., Dale R. Hoff, Basking Ridge, N.J., and Clarence S. Rooney, Beaconsfield, Quebec, Canada, assignors to Merck & Co., Inc., Rahway, N.J.
No Drawing. Application Sept. 5, 1969, Ser. No. 855,765, now Patent No. 3,646,027, which is a continuation-in-part of application Ser. No. 550,932, May 18, 1966, which in turn is a continuation-in-part of application Ser. No. 470,239, July 7, 1965, both now abandoned. Divided and this application Nov. 12, 1971, Ser. No. 198,419
Int. Cl. C07d *49/36*
U.S. Cl. 260—309 **14 Claims**

1-substituted-5-nitroimidazol-2-ylalkyl carbamates, containing N-hydroxy, N-alkoxyalkyl, or N-hydroxyalkyl substitution, or the analogous thiol substitution, and acid addition salts thereof are prepared from 1-substituted-5-nitroimidazoles having at the 2-position of the imidazole ring an hydroxyalkyl, mercaptoalkyl, haloalkyl, halocarbonylalkyl, or halothiocarbonyloxyalkyl radical. The 1-substituted-5-nitroimidazol - 2 - ylalkyl-(N-substituted)-carbamates are useful in the treatment of parasitic diseases. Antiparasitic compositions in which the active ingredient is a 1 - substituted-imidazol-2-ylalkyl-(N-substituted)-carbamate are also provided.

3,773,782
THIOPHOSPHATES OF ACYLATED 3-AMINO-2-OXAZOLIDONES
James Zielinski, 7 Trippiet Road, Somerset, N.J. 08873
No Drawing. Continuation-in-part of abandoned application Ser. No. 33,860, May 1, 1970. This application Oct. 18, 1971, Ser. No. 190,297
Int. Cl. C07d *85/28*
U.S. Cl. 260—307 C **12 Claims**

Thiophosphates of acylated 3 - amino-2-oxazolidones represented by the following structure:



(I)

In this formula, each of R and R_1 is C_1–C_8 alkylthio, C_1–C_8 alkyl optionally substituted by halogen, nitro, alkoxy, alkylthio, phenyl and phenoxy. Each of R and R_1 may also be phenyl and phenoxy optionally substituted by halogen, nitro, and C_1–C_8 alkyl. Each of R_2 and R_3 is hydrogen, lower alkyl (C_1–C_6 branched or unbranched), C_1–C_8 alkylthioalkyl, C_1–C_8 alkoxyalkyl, C_1–C_8 mono or dialkylaminoalkyl, C_1–C_8 alkylthio, alkoxy or mono and dialkylamino, C_1–C_8 alkyl sulfoxyl or C_1–C_8 alkyl sulfonyl, CN, halogen, carboxamido and carboalkoxy. R_4 is hydrogen, C_1–C_8 alkyl, C_1–C_8 haloalkyl, C_1–C_8 alkylthioalkyl, C_1–C_8 alkoxy-alkyl, or C_1 to C_8 mono and C_2 to C_8 dialkylamino alkyl. Each X is oxygen or sulfur. The symbol *n* stands for an integer of from 1 to 3.

Preferred are those compounds in which each of R and R_1 is C_1–C_3 alkoxy; each of R_2, R_3 and R_4 is hydrogen; each X is oxygen; and *n* is 1. These organo phosphorus compounds have been found to possess highly active contact and systemic insecticidal and miticidal activity.

3,773,783
BENZYL SUBSTITUTED-5-ARYL-IMIDAZO [2,1-a]ISOINDOLES
William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.
No Drawing. Filed July 24, 1972, Ser. No. 274,311
Int. Cl. C07d *57/02*
U.S. Cl. 260—309 **4 Claims**

Benzyl substituted-5-aryl-imidazo[2,1-a]isoindoles, e.g., 5-benzyl - 5 - (p-chlorophenyl)-5H-imidazo[2,1-a]isoindoles are prepared by treating alkali metal salts of 5-aryl-imidazo[2,1-a]isoindoles with benzyl halides and are useful as anti-microbials.

3,773,784
PROCESS OF OXIDATIVE CATALYTIC DEHYDROCYCLIZATION OF SUBSTITUTED AROMATIC COMPOUNDS
Marcello Massi Mauri, San Donato Milanese, and Pietro Moggi, Milan, Italy, assignors to Snam Progetti S.p.A., Milan, Italy
No Drawing. Filed Oct. 16, 1970, Ser. No. 81,566
Claims priority, application Italy, Oct. 16, 1969; 23,437/69; Oct. 16, 1969, 23,438/69; Oct. 16, 1969, 23,439/69
Int. Cl. C07d *27/56, 63/20, 5/32*
U.S. Cl. 260—319.1 **9 Claims**

Indoles, benzothiophenes and benzofurans are prepared by oxidative dehydrocyclization of substituted aromatic compounds in the presence of an oxygen-containing gas and an activated silica catalyst.

3,773,785

1-ALKYL-5-ALKYLAMINO-INDOLINES

Robert E. Manning, Mountain Lakes, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 82,093, Oct. 19, 1970. This application Sept. 28, 1972, Ser. No. 184,625

Int. Cl. C07d *27/38*

U.S. Cl. 260—326.11 R 14 Claims

1-alkyl-5-alkylamino-indolines, e.g., 1-octyl-5-(2-octylamino)-indoline, are prepared by reducing 1-alkanoyl-5-alkylamino-indolines or by the reductive alkylation of 5-amino-indoline with 2-heptanone and are useful as hypolipidemic agents.

3,773,786

RESOLUTION OF LYSINEAMIDE

Stylianos Sifniades, Parsippany, Robert Fuhrmann, Morris Plains, and Allen A. Tunick, Denville, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 28, 1971, Ser. No. 167,020

Int. Cl. C07d *27/08*

U.S. Cl. 260—326.45 2 Claims

L-lysineamide dihydrochloride can be isolated by preparing the intermediate D- and L-lysineamide-L-pyrrolidone carboxylate hydrochloride salts which can be separated from alkanol solution by fractional crystallization. The L-lysineamide pyrrolidone carboxylate hydrochloride salt is then treated with excess hydrogen chloride to form the desired L-lysineamide dihydrochloride.

3,773,787

IMIDO POLYPHENYL OXIDES

Joseph John Dickert, Jr., Lower Makefield Township, Bucks County, Pa., and Israel Joel Heilweil, Princeton Township, Mercer County, N.J., assignors to Mobil Oil Corporation

No Drawing. Original application Sept. 12, 1969, Ser. No. 857,591, now Patent No. 3,622,514. Divided and this application Feb. 3, 1971, Ser. No. 112,396

Int. Cl. C07d *27/10, 27/52*

U.S. Cl. 260—326 N 9 Claims

This invention provides compounds having a diphenyl ether or a polyphenyl ether moiety between terminal imide structures, as well as lubricant compositions containing same. The new compounds impart extreme pressure, detergency, and antioxidant properties to the lubricant.

3,773,788

METHOD FOR THE PREPARATION OF N-(SUBSTITUTED PHENYL)-2-IMINOPYRROLIDINES

Jan H. Vis, Shaker Heights, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

No Drawing. Continuation of abandoned application Ser. No. 4,786, Jan. 21, 1970. This application Nov. 26, 1971, Ser. No. 202,566

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.85 5 Claims

A simple method for the manufacture of N-(substituted phenyl)-2-iminopyrrolidines.

3,773,789

PHOSPHONATES

John H. Fried, Palo Alto, Calif., assignor to Syntex Corporation, Panama, Panama

No Drawing. Original application Dec. 4, 1967, Ser. No. 687,502, now Patent No. 3,639,428, dated Feb. 1, 1972. Divided and this application Mar. 18, 1971, Ser. No. 125,854

Int. Cl. C07d *13/04*

U.S. Cl. 260—340.9 4 Claims

Preparation of α,β-unsaturated carbocyclic ketones by reacting an enol lactone with a carbanion generated by treatment of a methylphosphonate or a mono-substituted methylphosphonate with base.

3,773,790

SPIROACETAL DIAMINE-EPOXIDE LIQUID AS CURING AGENT FOR EPOXY RESINS

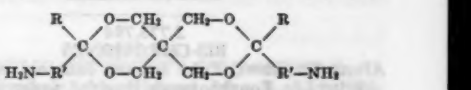
Ippei Yoshimura, Tokyo, Norihiko Fukue and Hiroshi Sakamoto, Kawasaki, Hisashi Murofushi, Tokyo, and Takami Hiyama and Takao Matsunaga, Yokohama, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 880,356, Nov. 26, 1969, now Patent No. 3,679,707, which is a continuation-in-part of abandoned application Ser. No. 560,067, June 24, 1966. This application June 20, 1972, Ser. No. 264,621

Int. Cl. C07d *15/04*

U.S. Cl. 260—340.7 6 Claims

Epoxides react with spiroacetal diamines of the formula



to form a viscous liquid which is a good hardener for epoxy resin intermediates, in the formula R being hydrogen, methyl, or ethyl, and R′ being alkyl having 1 to 6 carbon atoms. Epoxy resins cured by means of the hardener are flexible, colorless and transparent.

3,773,791

GAMMA-SUBSTITUTED-GAMMA-BUTYROLACTONE ADDUCTS OF O,O-DIALKYL-PHOSPHORODITHIOIC ACIDS

Paul G. Rodewald, Jr., Rocky Hill, N.J., Carleton N. Rowe, Lower Makefield Township, Bucks County, Pa., and El Ahmadi I. Heiba, Princeton, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed May 4, 1970, Ser. No. 34,563

Int. Cl. C07d *5/06*

U.S. Cl. 260—343.6 1 Claim

This specification discloses adducts of gamma-substituted-gamma-butyrolactones with O,O-dialkyl-phosphorodithoic acids and their use as herbicides and as lubricant additives for reducing the wear of sliding steel surfaces.

3,773,792

ACETATES OF PLICATIC ACID AND PROCESSES FOR THE PREPARATION THEREOF

Donald W. Langille, deceased, late of Vancouver, British Columbia, Canada, by Olive I. Langille, executrix, Vancouver, British Columbia, Canada, assignor to ITT Rayonier Incorporated

No Drawing. Continuation of abandoned application Ser. No. 425,066, Jan. 12, 1965. This application Mar. 8, 1968, Ser. No. 712,337

Int. Cl. C07d *5/32*

U.S. Cl. 260—343.3 4 Claims

A highly reactive, colorless, crystalline acetate of plicatic acid is prepared by dissolving plicatic acid in a suitable, relatively inert polar solvent such as ethyl acetate and then acetylating it with acetic anhydride in the presence of a catalyst (preferably perchloric acid). The crystalline acetate of plicatic acid (empirical formula: $C_{32}H_{30}O_{14}\cdot 2H_2O$) is precipitated from the solution by the addition of an excess of water, sodium acetate solution or an aliphatic alcohol. The colorless, crystalline acetate is useful as an intermediary from which other useful compounds such as paint pigments, dyes and the like can be formed. In addition, a yellow pigment (empirical formula: $C_{24}H_{24}O_{11}$) is prepared by the hydrolytic deacetylation of the foregoing colorless, crystalline acetate of plicatic acid with either concentrated sulfuric acid or dilute sodium hydroxide at ambient temperatures and under the proper conditions. The yellow deacetylation product is a good paint pigment and also forms lakes with iron and aluminium that are useful in dyeing cotton goods mordanted with these metals. Cellulose acetate yarns treated with a sodium bicarbonate solution of the deacetylated product is dyed a stable blue color.

3,773,793

ACYL PYRONES

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Filed Aug. 7, 1972, Ser. No. 278,328
Int. Cl. C07d 7/16
U.S. Cl. 260—343.5 5 Claims

Process for the production of aliphatic 2,4-dienoic acids and esters thereof which comprises condensing an aldehyde such as dihydrocitronellal with an ester of beta-methylglutaconic acid, acidification of the 1,4-diacid salt to the free 1,4-diacid and decarboxylation to the C–1 acid and novel intermediates.

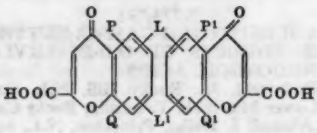
3,773,794

BIS-CHROMONES

Albert Chambers, Peter Bennett Johnson, and Thomas Brian Lee, Loughborough, England, assignors to Fisons Limited, London, England

No Drawing. Filed July 23, 1971, Ser. No. 165,694
Int. Cl. C07d 7/34
U.S. Cl. 260—345.2 10 Claims

There are disclosed doubly linked bis-chromones of Formula I,



(I)

in which

L and L¹, which may be the same or different, each represent a single bond, a single linking atom, or a group —OXO—, in which X represents an alkylene chain containing from 1 to 6 carbon atoms and which may optionally be substituted by a —OH group, and

P, Q, P¹ and Q¹, which may be the same or different, are each hydrogen, alkyl, halogen, hydroxy, alkenyl, phenyl or alkoxy, the alkoxy optionally being substituted by alkoxy, hydroxy or a heterocyclic ring containing carbon and oxygen, the alkyl, alkenyl alkoxy and substituted alkoxy groups containing from 1 to 8 carbon atoms,

and pharmaceutically acceptable derivatives thereof. Processes for making the compounds of Formula I and pharmaceutical compositions containing them are also disclosed. The compounds of Formula I are indicated for use in the treatment of asthma.

3,773,795

11-DEOXY PROSTAGLANDIN INTERMEDIATES

Jehan F. Bagli, Valois Gardens, Quebec, and Tibor Bogri, Montreal, Quebec, Canada, assignors to Ayerst, McKenna and Harrison Limited, Montreal, Quebec, Canada

No Drawing. Continuation-in-part of application Ser. No. 157,704, June 28, 1971. This application June 5, 1972, Ser. No. 259,896
Int. Cl. C07c 61/34, 61/36, 79/44
U.S. Cl. 260—345.7 20 Claims

Process for preparing prostanoic acid derivatives, in particular derivatives of 9,15-dioxygenated prostanoic acid and prost - 13 - enoic acid, related additionally unsaturated derivatives, homologs thereof and intermediates therefor, in which a lower alkyl ester of 2-(ω-carboxy-Y)-cyclopent-2-en-1-one in which Y is CH_2—(*a*)—$(CH_2)_m$ wherein (*a*) is CH_2CH_2, CH=CH or C≡C and *m* is an integer from 2–4 is treated with nitromethane to yield 2-(ω-carboxy-Y)-3-nitromethylcyclopentan-1-one and the latter compound or its corresponding 1-hydroxy analog are converted to the corresponding aldehyde, 2-(ω-carboxy-Y)cyclopenten - 1 - en - 3 - al or 1-hydroxy-2-(ω-carboxy-Y)cyclopentan-3-al, respectively. Treatment of the aldehyde with the ylid prepared from the appropriate Wittig reagent, preferably a dimethyl 2-oxoalkylphosphonate of the formula $(AlkO)_2P(O)CH_2CO(CH_2)_nCH_3$ in which *n* is an integer of from 1–6 and Alk is an alkyl containing from 1–3 carbon atoms yields the corresponding derivatives of 2-(ω-carboxy-Y)-3-(3-oxoalk-1-enyl) cyclopentan-1-one or -1-ol in which the oxygen functions may be selectively protected and transformed by conventional means, and in which the unsaturated bonds may be reduced to a single bond. The prostanoic acid derivatives possess prostaglandin like biological activities. Methods for their use are also disclosed.

3,773,796

PRODUCTION OF OXYGEN-CONTAINING HETEROCYCLIC COMPOUNDS

Roy Dennis Bowden, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Original application Mar. 3, 1969, Ser. No. 803,983, now Patent No. 3,704,238, dated Nov. 28, 1972. Divided and this appplication Feb. 3, 1971, Ser. No. 112,458
Claims priority, application Great Britain, Mar. 15, 1968, 12,643/68
Int. Cl. C07d 7/46
U.S. Cl. 260—345.9 4 Claims

A process for the production of a 4,4'-bi(4H)-pyran and a 4,4'-bipyrylene which comprises reducing the corresponding pyrylium salt whereby two molecules of the salt are coupled together to form the bi(4H)-pyran and the bipyrylene.

3,773,797

Madhukar Subraya Chodnekar, Basel, Albert Pfiffner, Pfaffhausen, Norbert Rigassi, Arlesheim, Ulrich Schwieter, Reinach, and Milos Suchy, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 23,984, Mar. 30, 1970. This application Oct. 29, 1970, Ser. No. 85,302
Claims priority, appplication Switzerland, Aug. 5, 1969, 11,849/69
Int. Cl. C07d 1/18
U.S. Cl. 260—348 R 6 Claims

Propargyl alkyl or alkenyl ethers and esters, the alkyl or alkenyl radical contains a chain of from 6 to 13 carbon atoms and the double bonds in the alkenyl group can be epoxidized, hydrohalogenated or episulfidized, useful in killing and preventing the proliferation of insects by upsetting their hormone balance.

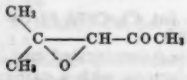
3,773,798

PROCESS FOR PREPARING EPOXIDE COMPOUNDS

Carlo Neri and Emilio Perrotti, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

No Drawing. Filed June 17, 1971, Ser. No. 154,220
Claims priority, application Italy, June 17, 1970, 26,110/70
Int. Cl. C07d 1/02
U.S. Cl. 260—348 R 2 Claims

A compound represented by the formula:



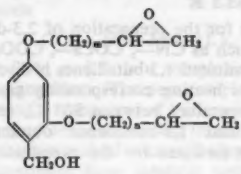
is prepared by reacting acetone in the presence of $(CuOCH_3)Cl$-pyridine.

3,773,799
DIGLYCIDYL ETHER OF 4-METHYLOL RESORCINOL

John J. Schmid, Panama City, Fla., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed July 6, 1971, Ser. No. 160,149
Int. Cl. C07d *1/18*
U.S. Cl. 260—348 R 1 Claim

High yields of rapid curing epoxy resins derived from 1,3-diphenols and having the formula:



wherein *m* and *n* each have values of at least 1. These resins can be cured at room temperature and can be used for a variety of industrial applications including adhesives, protective coatings and/or encapsulants for heat-sensitive electrical components used, for example, in the manufacture of fuzes.

3,773,800
PROCESS FOR THE PRODUCTION OF 1,5-DIHYDROXYANTHRAQUINONE

Rudolf Winkler, Reinach, Basel-Land, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

No Drawing. Filed Feb. 9, 1971, Ser. No. 114,056
Int. Cl. C09b *1/04*
U.S. Cl. 260—383 7 Claims

The invention is concerned with the manufacture of 1,5-dihydroxyanthraquinone by the condensation of m-hydroxybenzoic acid in an aluminum chloride-sodium chloride melt.

3,773,801
PROCESS FOR PREPARING 1-HYDROXY-3-METHYL ANTHRAQUINONES

Gerard Lang, Epinay-sur-Seine, France, assignor to L'Oreal, Paris, France

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,422
Claims priority, application Luxembourg, Sept. 7, 1970, 61,653
Int. Cl. C09h *1/04*
U.S. Cl. 260—383 7 Claims

Substituted 1-hydroxy-3-methyl anthraquinones, as for example 1,3,5-trihydroxy-3-methyl anthraquinone, are prepared by reacting a 2-halogeno naphthoquinone with a 1,1-dialkoxy-3-methyl butadiene in the presence of an inert anhydrous solvent with subsequent dealkylation according to the disclosed process. The 1-hydroxy-3-methyl anthraquinones thus produced are useful as intermediates in organic synthesis.

3,773,802
N-ARYLSULFONYL-N'-2-TETRAHYDRO-DICYCLOPENTADIENYLUREAS

Albrecht Zschocke, Bad Durkheim, Horst Kummer, Ludwigshafen, Eike Mayrhofer, Offstein, Josef Kimmig, Hamburg, and Hans Kiefer, Wachenheim, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Aug. 28, 1970, Ser. No. 68,054
Claims priority, application Germany, Sept. 5, 1969, P 19 45 007.8
Int. Cl. C07c *127/12*
U.S. Cl. 260—397.7 6 Claims

N-arylsulfonyl - N' - 2 - tetrahydrodicyclopentadienyl-ureas and antidiabetic preparations containing them, and a method for their manufacture.

3,773,803
PROCESS OF PREPARATION OF 21-SULFATE AND 21-PHOSPHATE ESTERS OF CORTICOSTEROIDS

Ivan Villax, 3 Travesso do Ferreiro, Lisbon, Portugal

No Drawing. Filed May 26, 1972, Ser. No. 257,321
Claims priority, application Portugual, June 5, 1971, 55,887
Int. Cl. C07c *169/34*
U.S. Cl. 260—397.45 11 Claims

21-sulfate and phosphate esters of corticosteroids are prepared by reacting the respective 21-diiodo compounds with a sodium or potassium salt, a tertiary amine addition salt of a mineral oxyacid followed by neutralization of the remaining acid functions of the product.

3,773,804
LIPOPHILIC DETERGENT COMPOSITIONS

Ernest C. Ford, Jr., Newark, and John D. Zech, Wilmington, Del., assignors to Atlas Chemical Industries, Inc., Wilmington, Del.

No Drawing. Filed June 10, 1971, Ser. No. 151,963
Int. Cl. A23j *7/00*; C07f *9/02*
U.S. Cl. 260—403 6 Claims

A series of new compositions comprising salts of partial fatty acid-phosphoric acid esters of polyalkoxylated polyols having 4 to 6 carbon atoms have been found especially useful as lipophilic detergents. Amine salts of compositions having from 1 to 8 polyoxyalkylene groups, 1 to 4 fatty acid ester groups, and 1 to 2 phosphoric acid groups per mol of polyol are particularly useful as ashless fuel oil sludge dispersants.

3,773,805
11-HALO-3,7,11-TRIALKYL-2-ALKENOIC AND 2,6-ALKADIENOIC ACID AMIDES

John B. Siddall, 975 California Ave., and Jean Pierre Calame, 3401 Hillview Ave., both of Palo Alto, Calif. 94304

No Drawing. Application Apr. 21, 1969, Ser. No. 818,130, now abandoned, which is a continuation-in-part of application Ser. No. 618,339, Feb. 24, 1967, which in turn is a continuation-in-part of applications Ser. No. 579,490, Sept. 15, 1966, Ser. No. 590,195, Oct. 28, 1966, Ser. No. 592,324, Nov. 7, 1966, Ser. No. 594,664, Nov. 16, 1966, and Ser. Nos. 605,566 and 605,578, both Dec. 29, 1966, all now abandoned. Divided and this application May 3, 1971, Ser. No. 139,916
Int. Cl. A01n *9/20*; C07c *103/10, 103/56*
U.S. Cl. 260—404 10 Claims

Hydrocarbon amides and N-substituted hydrocarbon amides containing at least 12 carbon atoms in the hydrocarbon backbone chain and alkyl substituents at the C–3, 7 and 11 positions and/or double bond unsaturation between C–2,3, C–6,7, and C–10,11 and/or substituents at each of positions C–2,3,6,7,10 and 11 which are arthropod maturation inhibitors.

3,773,806
PROCESS FOR POLYMERIZING UNSATURATED FATTY ACIDS AND THEIR ESTERS

Mamoru Morimoto, Masahiro Saito, and Atsushi Goukon, Wakayama, Japan, assignors to Kao Soap Co., Ltd., Chuo-ku, Tokyo, Japan

No Drawing. Filed May 26, 1971, Ser. No. 147,233
Int. Cl. C08b *9/00*
U.S. Cl. 260—407 8 Claims

A process for preparing a polymerizate mainly composed of dimer having cyclohexene structure by the thermal polymerization of a conjugated unsaturated fatty acid or its ester, in which an aryl sulfohalide is added to the reaction system as catalyst in order to increase the reaction rate and reduce the content of trimer and higher polymers in the product.

3,773,807

PROCESS FOR CONTINUOUSLY PRODUCING A COMPOUND CAPABLE OF BEING POLYCONDENSED OR POLYMERIZED

Federico Urgesi, Vircelli, Italy, and Horst Rothert, Berlin, Germany, assignors to Chatillon Societa Anonima Italiana per le Fibre Tessili Artificiali S.p.A., Milan, Italy, and Karl Fischer, Apparate- und Rohrleitungsbau, Berlin, Germany

Continuation of abandoned application Ser. No. 519,860, Jan. 11, 1966. This application Nov. 3, 1970, Ser. No. 86,646

Claims priority, application Italy, Jan. 15, 1965, 81,365/65

Int. Cl. C07c *69/82*

U.S. Cl. 260—475 P 7 Claims

There is provided a process and an apparatus for continuously producing a polymerizable material, the process being dependent upon utilizing differential viscosities of the unreacted materials and the reacted materials, and the apparatus comprising an elongated reactor provided with an inlet at one end and an outlet at the other, means for feeding a continuous stream of mixed, unreacted reactants into the inlet, means for promoting the reaction, and movable means within the reactor for subjecting the material therein to a retaining influence on the more viscous unreacted reactants than on the less viscous reacted portions thereof whereby the reacted portions are permitted to pass through the apparatus, and the unreacted portions are retained pending completion of the reaction.

3,773,808

METHOD OF PREPARING CYANOACETIC ACID ESTERS

Petrus Gerardus Johannes Wesselman, van Houtenlaan, Weesp, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

No Drawing. Filed Oct. 22, 1969, Ser. No. 868,606

Claims priority, application Netherlands, Oct. 26, 1968, 6815349

Int. Cl. C07c *121/06*

U.S. Cl. 260—465.4 8 Claims

A method of preparing cyanoacetic acid esters by reacting halogenacetic acid esters with alkali cyanide in a reaction medium consisting of acetonitrile.

3,773,809

SEPARATION OF ORGANIC PHOSPHORUS COMPOUNDS AND THEIR METAL COMPLEXES FROM ORGANIC NITRILES IN THE HYDROCYANATION OF OLEFINS

Jack William Walter, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 86,587, Nov. 3, 1970. This application June 28, 1972, Ser. No. 267,106

Int. Cl. C07c *121/04*

U.S. Cl. 260—465.8 R 13 Claims

A process for separating an organic phosphorus compound such as a phosphite or phosphonite or a zerovalent nickel complex of the organic phosphorus compound from a product fluid containing organic nitriles produced by hydrocyanating an ethylenically unsaturated organic mono-nitrile such as 3-pentenenitrile through extraction of the product fluid with a paraffin or cycloparaffin hydrocarbon solvent at a temperature of about 0° C. to about 100° C. to produce a multiphase mixture wherein the organic phosphorus compounds and their metal complexes are contained predominantly in the hydrocarbon phase and the organic mono- and dinitriles and degradation products are contained in a separate phase.

3,773,810

PROCESS FOR THE PREPARATION OF 2,3-DISUBSTITUTED 1,3-BUTADIENES

Daniel Bellus, Riehen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed July 28, 1971, Ser. No. 166,975

Claims priority, application Switzerland, Aug. 4, 1970, 11,717/70

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.8 R 2 Claims

A new process for the preparation of 2,3-disubstituted 1,3-butadienes, such as CN—, COCl—, COOalkyl— and COOallyl—disubstituted 1,3-butadienes is disclosed which process comprises heating corresponding gaseous cyclobutenes to a temperature between 90° C. and 550° C., the 2,3-disubstituted 1,3-butadienes obtained thereby being useful intermediates for the preparation of polymers.

3,773,811

ESTERS OF α-HYDROPEROXY-BIS-p-HALOPHENYLACETIC ACIDS

Yair Sprinzak, Rehovoth, Israel, assignor to Yeda Research and Development Co., Ltd., Rehovoth, Israel

No Drawing. Filed Dec. 18, 1968, Ser. No. 784,911

Claims priority, application Israel, Dec. 26, 1967, 29,228; Mar. 8, 1968, 29,602

Int. Cl. C07c *73/06*

U.S. Cl. 260—469 12 Claims

A process for the preparation of esters of α-hydroperoxy-bis-p-chloro-(or-bromo)-phenylacetic acids, compositions containing such materials and new esters of α-hydroperoxy-bis-p-bromo-phenylacetic acids are disclosed.

3,773,812

ALKYLENE-BRIDGED ESTERS

Henry G. Schutze and Herschel C. Williams, Baytown, Tex., Delos E. Bown, White Plains, N.Y., and Norman P. Neureiter, Bethesda, Md., assignors to Esso Research and Engineering Company

No Drawing. Application Nov. 14, 1966, Ser. No. 611,785, now Patent No. 3,510,507, which is a division of application Ser. No. 248,876, Jan. 2, 1963. Divided and this application Jan. 7, 1970, Ser. No. 1,293

Int. Cl. C07c *69/34*

U.S. Cl. 260—479 S 2 Claims

Polyphosphorous condensation products, polyborate condensation products, polycarbonate condensation products and polysilicate condensation products of 4,4'-bisphenols are especially effective stabilizers for polyolefins.

3,773,813

PROCESS FOR PRODUCING ANIONIC METAL SULFONATES

Mack W. Hunt, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed May 14, 1971, Ser. No. 148,263

Int. Cl. C07f *9/00, 9/90*

U.S. Cl. 260—429 K 10 Claims

A process for producing anionic metal sulfonates is disclosed wherein an anionic metal oxide or hydroxide is reacted with a high boiling alcohol to form the corresponding alkoxide. The alkoxide so formed is then reacted with an oil-soluble sulfonic acid to form the desired anionic metal sulfonate. The reactions for the formations of the sulfonate compound are carried out in the presence of a nonvolatile carrier compound.

3,773,814

COMPLEX COMPOUNDS OF IRIDIUM AND PROCESS FOR PREPARING SAME

Federico Maspero, Milan, and Emilio Perrotti, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

No Drawing. Filed Oct. 13, 1971, Ser. No. 189,048
Claims priority, application Italy, Oct. 13, 1970, 30,897/70
Int. Cl. C07f 15/00
U.S. Cl. 260—429 R 13 Claims

There are provided novel complex compounds of the general formula

$$(L)_n—Me—Me—(L)_n$$

wherein Me is Ir, and L is a complexing compound selected from phosphines. The new complexes are prepared by transforming a compound of iridium into at least a partial hydride, then dehydrogenating this in the presence of a hydrogen acceptor and of a complexing agent. The new complex compounds have catalytic activity, e.g., in the transfer of hydrogen in unsaturated compounds.

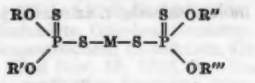
3,773,815

ANTIWEAR AND ANTIWELDING ADDITIVES FOR LUBRICANTS AND COMPOSITIONS THEREOF

Enzo Rossi, San Donato Milanese, Guido Giusti, Milan, and Luigi Imparato, Rome, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

No Drawing. Continuation of abandoned application Ser. No. 773,347, Nov. 4, 1968. This application July 29, 1971, Ser. No. 167,436
Int. Cl. C07f 7/24, 15/04
U.S. Cl. 260—435 5 Claims

Lubricant additive compounds are disclosed having the formula:



wherein each of said R, R′, R″ and R‴ groups is an alkyl group containing from 2 to 20 carbon atoms, at least one of them containing a —CCl_3 group and M is calcium, barium, copper, lead, nickel, cobalt, silver, antimony or tin. Their preparation is also described.

3,773,816

PRODUCTION OF ALKALI METAL ALUMINUM ALKOXIDES

Rudiger Honigschmid-Grossich, Ranzel, Arnold Lenz, Cologne-Stammheim, Otto Bleh, Bergheim, and Wolfgang Sandau, Wesseling, Germany, assignors to Dynamit Nobel AG, Troisdorf, Germany

No Drawing. Filed Oct. 7, 1971, Ser. No. 187,497
Claims priority, application Germany, Oct. 8, 1970, P 20 49 400.2
Int. Cl. C08f 5/06
U.S. Cl. 260—448 AD 13 Claims

The process for producing an alkali metal aluminum alkoxide of the formula $MAl(OR)_4$ wherein M is an alkali metal and R is selected from the group consisting of alkyl containing in excess of three carbon atoms, cycloalkyl and aralkyl, which comprises boiling a member selected from the group consisting of an excess of an alcohol of the formula ROH and a mixture of at least one organic solvent indifferent in relation to the other reactants and an excess of an alcohol of the formula ROH with a member selected from the group consisting of (a) a mixture of an alkali metal hydroxide and aluminum trihydroxide, (b) a mixture of an alkali metal alkoxide and aluminum trihydroxide and (c) an alkali metal aluminate, and removing water formed in the reaction. The water is preferably distilled off from the reaction with excess alcohol, condensed, the water removed from the condensate by lime, silica gel or a zeolite, and the water-free alcohol is recycled to the reaction until the water content in the alcohol distilling off falls to a very low level. Advantageously the aluminum is used in slight excess to ensure the product is free of excess alkali metal alkoxide.

3,773,817

POLYSILOXANE MALEATES

Abe Berger, 1504 Barclay Place, and Terry G. Selin, 2279 Dean St., both of Schenectady, N.Y. 12309

No Drawing. Original application May 17, 1971, Ser. No. 144,306. Divided and this application Dec. 20, 1972, Ser. No. 316,893
Int. Cl. C07f 7/08, 7/10
U.S. Cl. 260—448.2 B 1 Claim

Silyl maleates and fumarates and polysiloxane maleates and fumarates useful as glass sizing agents are prepared in accordance with the present invention. The silyl maleates and polysiloxane maleates and fumarates are formed by reacting either the cis- or trans-1,2-bis-carbalkoxyethylenes having an unsaturated alkenyl group therein with a hydrogen silane or hydrogen polysiloxane in the presence of a platinum catalyst.

3,773,818

EQUILIBRATION OF CYANOALKYL POLYSILOXANES

George R. Siciliano, Ballston Lake, N.Y., assignor to General Electric Company

No Drawing. Filed Feb. 7, 1972, Ser. No. 224,255
Int. Cl. C07f 7/10
U.S. Cl. 260—448.2 E 16 Claims

Cyanoalkyl polysiloxanes are equilibrated by reacting in the presence of an alkali metal carbonate and/or alkaline earth metal carbonate catalyst.

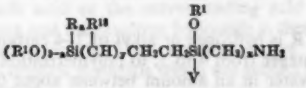
3,773,819

DISILYL-CONTAINING COMPOUNDS

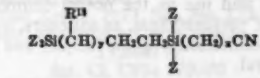
Abe Berger, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Original application Aug. 16, 1971, Ser. No. 172,292. Divided and this application Aug. 2, 1972, Ser. No. 277,475
Int. Cl. C07f 7/10
U.S. Cl. 260—448.2 N 1 Claim

A novel class of silicone compounds of the formula,



where R, R^1 and R^{18} are hydrocarbon radicals, V is selected from monovalent hydrocarbon radicals and monovalent alkoxy and aryloxy radicals, and the symbols *y*, *x* and *a* are whole numbers that vary from 0 to 20, 2 to 20 and 0 to 2, respectively, and the aforesaid compounds are prepared from compounds of the formula



where Z is halogen. This novel class of compounds are useful as glass sizing agents, as flocculants for colloidal organic matter and as detergent resistant agents in various compositions.

3,773,820

BIS-CHLOROSULPHONYL DIARYLCARBONATES AND PROCESS FOR THEIR PREPARATION

Ronald George Feasey, Knebworth, and John Brewster Rose, Letchworth, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed July 15, 1971, Ser. No. 165,770
Claims priority, application Great Britain, July 15, 1970, 34,310/70
Int. Cl. C07c 147/06, 147/10
U.S. Cl. 260—463 4 Claims

New bis-chlorosulphonyl diarylcarbonates of the formula $ClSO_2—Q—O—CO—O—Q'—SO_2Cl$ may be made

by a process which comprises reacting chlorosulphonic acid ($HOSO_2Cl$) with a diaryl carbonate having the formula H—Q—O—CO—O—Q'—H in which Q and Q' are bivalent aromatic radicals which may be the same or different.

3,773,821

PROCESS FOR THE PRODUCTION OF ACETONE-DICARBOXYLIC ACID ESTERS

Fabio Broussard, Visp, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

No Drawing. Filed Sept. 14, 1971, Ser. No. 180,466

Claims priority, application Switzerland, Sept. 15, 1970, 13,640/70

Int. Cl. C07c *67/00*

U.S. Cl. 260—483 **8 Claims**

Acetone-dicarboxylic acid esters are produced by reacting phosgene at a temperature of —10° C. to 20° C. with an excess of ketene dissolved in a solvent which is liquid at the reaction temperature and has a dielectric constant of 2–8, the resulting acetone-dicarboxylic acid chloride being reacted without separation from the reaction mixture with an alcohol to produce the desired ester.

3,773,822

PROCESS OF MAKING POLYESTER POLYOLS

Erich Bäder, Hanau am Main, and Lothar Rohe, Wuppertal-Vohwinkel, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

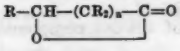
Filed Nov. 5, 1970, Ser. No. 87,052

Claims priority, application Germany, Nov. 6, 1969, P 19 55 841.9

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 A **10 Claims**

Polyester polyols are made by subjecting a lactone of the formula



in which R is hydrogen or alkyl of 1–4 carbon atoms and *n* is an integer from 4 to 5, to polymerization in the presence of water in an amount between about 0.03 and 1.0 mole for each mole of lactone at a temperature between about 50 and 300° C. whereby the lactone ring is opened and an ω-hydroxy polyester carboxylic acid of an average molecular weight between about 300 and 3000 is formed whereupon the acid is reacted with a lower alkylene oxide to form the polyester polyol.

The polyols find use as the polyol component in the manufacture of polyurethanes, as softeners, as lubricating agents and in connection with the lacquer and resin manufacture in general.

3,773,823

ESTERS OF 5-OXAALKENOIC ACIDS

Vaclav Jarolim, Karel Slama, and Frantisek Sorm, Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie Ved, Prague, Czechoslovakia

No Drawing. Filed Apr. 15, 1971, Ser. No. 134,461

Claims priority, application Czechoslovakia, May 5, 1970, 3,119/70, 3,120/70, 3,121/70

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 R **13 Claims**

Esters of 5-oxaalkenoic acids containing in the chain 12–17 carbon atoms, substituted at positions 3, 7 and 11 by an alkyl, alkylidene or alkenyl group, containing a double bond between the carbon atoms C–2,3 and/or C–11, 12 or C–12,13 and/or containing halo atoms of epoxide bridges instead of double bonds, represent substances having insect juvenile hormone activity, i.e., interfere in the insect development.

3,773,824

3-(4-METHYL-3-CYCLOHEXENYL)BUTYL ESTERS OF ORGANIC ACIDS

Jerry G. Strong, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed June 14, 1971, Ser. No. 153,057

Int. Cl. C07c *69/66*

U.S. Cl. 260—484 R **3 Claims**

3-(4-methyl-3-cyclohexenyl)butyl esters form a class of compounds exhibiting fungicidal and plant growth regulant activity, and, of which, certain 3-(4-methyl-3-cyclohexenyl)butyl esters of substituted acetic acids are novel compounds. In fungicide tests, the compounds of this invention are effective against *Fusarium oxysporium, Pythium debaryanum, Rhizoctonia solani* and *Sclerotium rolfsil.* In herbicide tests, post-emergent application of the compounds of this invention provides plant growth regulant action, such as cotton defoilation and chemical pinching.

3,773,825

FIRE RETARDANT POLYESTER PLASTICIZERS

Charles E. Reineke, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

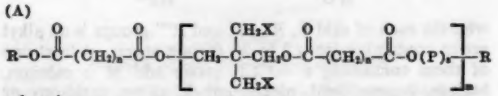
No Drawing. Filed Dec. 10, 1971, Ser. No. 206,938

Int. Cl. C07c *69/44*

U.S. Cl. 260—485 G **2 Claims**

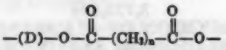
New low molecular weight, saturated polyesters of the formula

(A)



wherein

P is

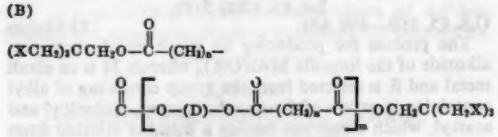


R is a saturated alkyl radical of up to about 10 carbon atoms, and

s is 0 to 5;

or

(B)



wherein, in both (A) and (B),

X is independently Br or Cl,

D is the residue of a diol selected from the group consisting of ethylene glycol, diethylene glycol, triethylene glycol, trimethylene glycol, propylene glycol, butylene glycol, and 2,2-dimethyl-1,3-propanediol formed by removal of the hydroxyl groups,

m is 1 to 4, and

n is 4 to 8.

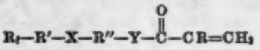
These polyesters are useful as fire retardant plasticizers for vinyl chloride polymers, either alone or in combination with nonhalogenated containing plasticizers.

3,773,826
FLUORINATED ACRYLIC MONOMERS CONTAINING HETERO ATOMS

Christian Schriver Rondestvedt, Jr., Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Original application May 16, 1967, Ser. No. 638,721, now Patent No. 3,655,732. Divided and this application Nov. 16, 1971, Ser. No. 199,329
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 H 1 Claim

Perfluoroalkyl acrylic monomers of the formula



wherein R_f is perfluoroalkyl; R′ and R″ are each alkylene; X is sulfur or —NR‴—; Y is oxygen, sulfur or —NR‴—; R‴ is hydrogen or lower alkyl; and R is hydrogen or methyl. Homopolymers of the above monomers and copolymers of the monomers with copolymerizable vinylidene monomers free of nonvinylic fluorine; both prepared by emulsion polymerization techniques with a free radical catalyst. Mixtures of the above polymers with a polymer derived from a polymerizable vinylidene monomer free of nonvinylic fluorine. Textile fabrics treated with the above polymers and mixtures of polymers to impart oil- and water-repellent properties to the fabric.

The preparation of the monomers from

$$R_f—R'—X—R''—YH$$

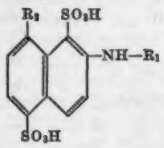
intermediates.

3,773,827
AMINONAPHTHALENE-SULPHONIC ACIDS

Karl-Heinz Schündehütte, Opladen, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Nov. 19, 1969, Ser. No. 878,236
Claims priority, application Germany, Nov. 22, 1968, P 18 10 279.9
Int. Cl. C07c *143/56*
U.S. Cl. 260—508 1 Claim

Aminonaphthalene sulphonic acids of the formula



wherein R_1 stands for hydrogen and acyl radical, R_2 denotes the grouping NO_2, NH_2 or OH. The compounds are useful for the production of azo-dyestuffs.

3,773,828
PRODUCTION OF ACRYLIC ACID

Koju Kadowaki and Takeo Koshikawa, both of 1315 Oaza-Wakaguri, Ami-machi, Inashiki-gun, Ibaraki-ken, Japan

No Drawing. Filed Dec. 28, 1971, Ser. No. 213,181
Claims priority, application Japan, Dec. 28, 1970, 46/119,639
Int. Cl. C07c *51/26*, *57/04*
U.S. Cl. 260—530 N 11 Claims

An α,β-unsaturated aldehyde, e.g. acrolein, is subjected to a vapor-phase catalytic oxidation to produce the corresponding α,β-unsaturated carboxylic acid, e.g. acrylic acid, in the presence of an oxidation catalyst comprising molybdenum, vanadium and oxygen, which catalyst has been produced through the use as at least a part of a vanadium source of vanadyl oxalate in an aqueous medium.

3,773,829
PROCESS FOR PREPARING ACYL ISOCYANIDE DICHLORIDES

Kurt Findeisen, Leverkusen, and Kuno Wagner, Leverkusen-Steinbuchel, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,385
Claims priority, application Germany, Jan. 5, 1971, P 21 00 219.7
Int. Cl. C07c *103/02*
U.S. Cl. 260—544 C 8 Claims

Acyl isocyanide dichlorides are prepared by reacting isocyanide dichlorides of the formula

$$R^1—CCl_2—N=CCl_2$$

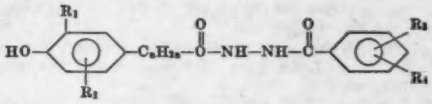
with an aldehyde at a temperature of from 0 to 300° C. in the presence of a Lewis acid.

3,773,830
N-AROYL-N′-(ALKYLHYDROXYPHENYL) ALKANOYLHYDRAZINES

Martin Dexter, Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 28,048, Apr. 4, 1970, now Patent No. 3,660,438. This application Mar. 2, 1972, Ser. No. 231,391
Int. Cl. C07c *103/30*
U.S. Cl. 260—559 H 8 Claims

N-benzoyl N′-(alkylhydroxyphenyl)alkanoylhydrazine compounds having the formula



wherein

R_1 is a lower alkyl group,
R_2 is hydrogen or a lower alkyl group,
R_3 and R_4 are independently hydrogen, alkyl, alkoxy or halogen and
n is 0 to 5,

are prepared by reacting an ester of an alkylhydroxyphenylalkanoic acid or the corresponding acid chloride with hydrazine and the resulting hydrazide is then reacted with a benzoyl chloride. These compounds are useful as stabilizers of organic materials which are subject to oxidative deterioration.

3,773,831
PROCESS FOR PREPARING AZINES

Godfrey Vaughan Jeffreys, Sutton Coldfield, and Colin Elliott Marks, Quorn, England, assignors to Fisons Limited, Suffolk, England

Filed Apr. 9, 1971, Ser. No. 132,740
Claims priority, application Great Britain, Apr. 10, 1970, 17,084/70
Int. Cl. C07c *119/00*
U.S. Cl. 260—566 B 11 Claims

Azines are prepared by reacting chlorine, diluted with an inert gas, with a reaction mixture containing ammonia, a carbonyl compound and a strong base, the reaction mixture being subjected to no appreciable deliberate agitation during the reaction.

3,773,832
HYDROGENATION OF ADIPONITRILE OVER ALKALI-MODIFIED COBALT CATALYST

Loren Dale Brake, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 16, 1970, Ser. No. 3,477
Int. Cl. C07c *85/12*
U.S. Cl. 260—583 K 5 Claims

Hexamethylenediamine is prepared by hydrogenating adiponitrile in the presence of an excess of hydrogen at a

total system pressure of from 3000 to 6000 p.s.i.g. in the presence of from about 200 to 800% of ammonia, based on the weight of the adiponitrile, at a temperature of from about 85° C. to about 185° C. in the presence of a pelleted, sintered, reduced cobalt oxide catalyst on which is maintained from about 200 to less than 1000 parts per million of a strong base.

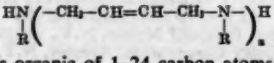
3,773,833

UNSATURATED POLYAMINES

Gisela Henrici Henrici and Salvador Olivé Martin, Zollikerberg, Switzerland, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 25, 1971, Ser. No. 157,049
Claims priority, application Switzerland, July 14, 1970, 10,625/70
Int. Cl. C07c *87/20, 87/24*
U.S. Cl. 260—583 H 3 Claims

Polyamines of the formula



wherein R is organic of 1–24 carbon atoms and *n* is an integer from 2 to 12. Such compounds are useful as corrosion inhibitors, halogen stabilizers, binders, adhesives and fluocculants.

3,773,834

SUPPRESSION OF DIAMINOCYCLOHEXANE FORMATION IN HEXAMETHYLENEDIAMINE MANUFACTURE

Donald B. Bivens and Leo W. Patton, Orange, Tex., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,426
Int. Cl. C07c *87/14*
U.S. Cl. 260—583 K 4 Claims

Formation of by-products such as diaminocyclohexane in the hydrogenation of adiponitrile to hexamethylenediamine over an ion catalyst is reduced by adding from 10 to 500 p.p.m. of a polyhydroxy compound such as sorbitol with the adiponitrile being hydrogenated.

3,773,835

METHOD FOR PRODUCING 2-ACETYL-7-METHOXY - 1,2,3,4,9,10 - HEXAHYDROPHENANTHRENE

Horst Gottschalk and Hans-Georg Schulz, Hamburg, Germany, assignors to Hans Schwarzkopf GmbH, Hamburg, Germany

No Drawing. Filed Sept. 3, 1971, Ser. No. 177,825
Int. Cl. C07c *49/76*
U.S. Cl. 260—586 H 6 Claims

This invention relates to the preparation of 2-acetyl-7-methoxy-1,2,3,4,9,10-hexahydrophenanthrene from 2-acetyl-7-methoxy-1,2,3,9,10,10a - hexahydrophenanthrene by rearrangement using halogens.

3,773,836

INDANONE DERIVATIVES AND PROCESSES FOR PRODUCING SAME

John B. Hall, Oakhurst, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed Aug. 18, 1969, Ser. No. 851,049
Int. Cl. C07c *49/54*
U.S. Cl. 260—586 R 4 Claims

Indanone derivatives having the formula

wherein one of R_1 and R_2 is O and the other is H_2; Y is H or, taken together with X, an epoxy oxygen; one of the single dashed lines represents a double bond, which is present unless said epoxy oxygen is present, and when R_2 is O and the double bond is conjugated with R_2, X is H; perfume compositions containing such indanones and processes for producing same.

3,773,837

PROCESS FOR PRODUCING BENZYL KETONES

James W. Sprague, Bedford, and Ronald J. Valus, Cleveland, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

No Drawing. Filed Sept. 21, 1970, Ser. No. 74,186
Int. Cl. C07c *49/76*
U.S. Cl. 260—590 5 Claims

Benzyl ketones are produced in a one-step process by reacting benzene with a ketone at elevated temperatures in the presence of divalent palladium salt of a carboxylic acid and a strongly acidic catalyst.

3,773,838

METHOD OF PREPARING DIMETHYLSULPHOXIDE

Ryszard Andruski, Maria Jedraska, Hersz Lichtensztejn, and Zbigniew Leszczynski, Warsaw, Poland, assignors to Instytut Przemyslu Organicznego

No Drawing. Filed Feb. 29, 1972, Ser. No. 230,469
Claims priority, application Poland, Mar. 1, 1971, P 146,554
Int. Cl. C07c *147/14*
U.S. Cl. 260—607 A 6 Claims

A method of preparing dimethylsulphoxide by oxidizing dimethyl sulphide by high concentrated (70–100%) solutions of organic hydroperoxides e.g. isopropylbenzene-hydroperoxide or ethylbenzene hydroperoxide. The process is carried out at temperatures of 20°–80° C. in a two-phase system; the first phase is an aqueous solution (1–8 moles H_2O/mol DMS) with an acid reaction in which the hydrogen ion concentration is from 10^{-6} to 1 g./dm.^{3} solution, while the second phase is an organic phase. Extraction of dimethylsulphoxide from the reaction solution is effected by the aqueous phase and any remaining dimethylsulphoxide in the organic phase is obtained by means of washing with an aqueous solution of the same hydrogen ion concentration as before. The extracts are distillated under reduced pressure giving pure dimethylsulphoxide. The raffinate is a ready product or can serve as a raw material for further syntheses.

3,773,839

ADDITION OF HYDROCARBON SULFENYL HALIDES TO OLEFINS

Wolfgang H. Mueller, Elizabeth, Alexis A. Oswald, Mountainside, and Daniel N. Hall, Linden, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation of application Ser. No. 836,127, June 24, 1969, which is a continuation-in-part of application Ser. No. 595,559, Oct. 28, 1966, both now abandoned. This application Aug. 30, 1971, Ser. No. 176,239
U.S. Cl. 260—609 R 6 Claims

Anti-Markownikov addition products and 1,2-Markownikov oriented products are secured through the reaction of sulfenyl halides, preferably sulfenyl chlorides, with olefins in the presence of non-reactive, non-nucleophilic base materials. The 1,2-Markownikov oriented adducts are the principal products when conjugated diolefins are employed as the starting feedstock. Anti-Markownikov adducts are obtained when unsymmetrical monoolefins and multiolefins are used as the starting material. Preferably, the addition reactions are conducted at temperatures below about 0° C.

3,773,840

DIFLUOROMETHYL-2,2,3,3-TETRAFLUORO-PROPYL ETHER

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Original application Aug. 10, 1970, Ser. No. 62,679, now Patent No. 3,689,459. Divided and this application July 3, 1972, Ser. No. 268,364
Int. Cl. C07c *43/00, 43/12*
U.S. Cl. 260—614 F 1 Claim

The compound difluoromethyl-2,2,3,3-tetrafluoropropyl ether useful as an intermediate in making an anesthetic agent.

3,773,841

1-CHLORO-2,2,3,3-TETRAFLUOROPROPYL DIFLUOROMETHYL ETHER

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Original application Aug. 10, 1970, Ser. No. 62,679, now Patent No. 3,689,459. Divided and this application July 3, 1972, Ser. No. 268,365
Int. Cl. C07c *43/00, 43/12*
U.S. Cl. 260—614 F 1 Claim

The compound 1-chloro-2,2,3,3-tetrafluoropropyl difluoromethyl ether useful as an intermediate in making an anesthetic agent.

3,773,842

PROCESS FOR THE PREPARATION OF 1,2,6-HEXANETRIOL

Jean-Pierre Schirmann, Buffalo, N.Y., and Francis Weiss, Pierre-Benite, France, assignors to Ugine Kuhlmann, Paris, France

No Drawing. Filed Jan. 27, 1969, Ser. No. 804,343
Claims priority, application France, Jan. 25, 1968, 137,422, Patent 1,559,112
Int. Cl. C07c *31/18*
U.S. Cl. 260—635 A 7 Claims

1,2,6-hexanetriol is prepared from the dimer of acrolein by dissolving the acrolein dimer in excess alcohol causing addition of the alcohol to the double bond of the acrolein dimer and then simultaneously hydrolizing and hydrogenating the acrolein dimer-alcohol addition product.

1,2,6-hexanetriol is a well-known compound of considerable utility as an intermediate in the preparation of alkyd and polyester resins. It is also used as a softening agent, a moistening agent and as a solvent.

3,773,843

ALKYLATION OF SATURATED HYDROCARBONS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,722
Int. Cl. C07c *3/54*
U.S. Cl. 260—666 P 9 Claims

Saturated hydrocarbons may be alkylated with an olefinic hydrocarbon as the alkylating agent. The reaction is effected in the presence of a hydrogen chloride compound and a catalyst comprising an organic peroxy compound at a temperature at least as high as the decomposition temperature of the catalyst.

3,773,844

PROCESS FOR THE SEPARATION OF ALKENE FROM ORGANIC MIXTURES CONTAINING SAME

Eli Perry, St. Louis, and William F. Strazik, St. Ann, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 22, 1972, Ser. No. 291,461
Int. Cl. C07c *7/02*
U.S. Cl. 260—669 A 16 Claims

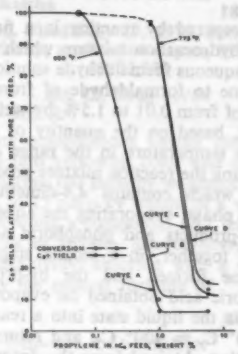
A monoalkene, such as styrene or hexene, is separated from organic mixtures comprising said alkene and another organic component or components by contacting said mixture under pervaporation permeation conditions against one side of a polymeric, permeation membrane, the membrane having a transition metal molecularly dispersed therein and withdrawing on the other side of the membrane a vaporous mixture having a higher concentration of alkene. The transition metal is in an oxidation state and in a form which permits chemical interaction with the monoalkene. Exemplary of transition metal is silver as elemental silver and as silver tetrafluoroborate.

3,773,845

CATALYTIC CONVERSION OF SATURATED HYDROCARBONS TO HIGHER AND LOWER MOLECULAR WEIGHT HYDROCARBONS

Thomas R. Hughes, Orinda, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jan. 16, 1970, Ser. No. 3,306
Int. Cl. C07c *9/00, 3/00*
U.S. Cl. 260—676 R 15 Claims



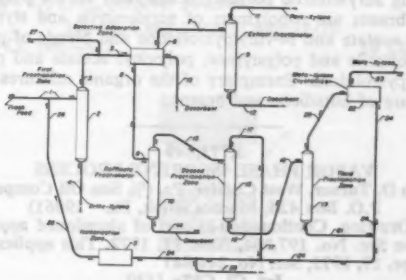
A process for disproportionation of saturated hydrocarbons which comprises contacting the saturated hydrocarbons at a temperature below 850° F., and much more preferably below 800 F., and in the presence of no more than 5 weight percent olefin, with a catalytic mass having a Group VI–B metal component and a Group VIII metal component.

3,773,846

PROCESS FOR THE PRODUCTION OF HIGH PURITY META-XYLENE

Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Aug. 7, 1972, Ser. No. 278,695
Int. Cl. C07c *7/02, 15/08*
U.S. Cl. 260—674 A 11 Claims



High purity meta-xylene, along with high purity para-xylene and, if desired, high purity ortho-xylene, is re-

covered and produced from a C_8 aromatic mixture containing the xylene isomers and ethyl-benzene by a combination of fractionation, selective adsorption, fractional crystallization, and isomerization. The unique combination allows the recovery of high purity meta-xylene by reducing the concentration of para-xylene and ortho-xylene in the feed to the meta-xylene crystallizer below that of the para-xylene/meta-xylene eutectic mixture and the ortho-xylene/meta-xylene eutectic mixture.

3,773,847

PROCESS FOR THE PREPARATION OF ISOPRENE FROM ISOBUTENE AND FORMALDEHYDE

Paul Lossacker, Leichlingen, Wulf Schwerdtel, Cologne, and Wolfgang Swodenk, Odenthal-Globusch, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Sept. 7, 1971, Ser. No. 178,043
Claims priority, application Germany, Sept. 9, 1970, P 20 44 623.5
Int. Cl. C07c *1/20*
U.S. Cl. 260—681 12 Claims

Isoprene is prepared by reacting in a first stage isobutene or a C_4-hydrocarbon mixture which contains isobutene with an aqueous formaldehyde solution at a molar ratio of isobutene to formaldehyde of from 1:1 to 1:2 in the presence of from 0.01 to 1.5% by weight of orthophosphoric acid, based on the quantity of aqueous formaldehyde, at a temperature in the range of 90° C. to 180° C.; separating the reaction mixture produced into an organic phase which contains 4,4-dimethyl-m-dioxane and an aqueous phase; evaporating the aqueous phase to remove the by-products and phosphoric acid dissolved therein; feeding together, in a second stage the 4,4-dimethyl-m-dioxane formed and the by-products which contain phosphoric acid obtained on evaporation of the aqueous phase, in the liquid state into a reactor which is operated at 200° C. to 400° C.; and returning the formaldehyde solution obtained from the decomposition reaction of the second stage which contains phosphoric acid to the first reaction stage.

3,773,848

PROCESS FOR THE SEPARATION OF DIENE FROM ORGANIC MIXTURES

Eli Perry, St. Louis, and William F. Strazik, St. Ann, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 16, 1971, Ser. No. 208,888
Int. Cl. C07c *7/02*
U.S. Cl. 260—681.5 R 13 Claims

Dienes such as butadiene and isoprene are separated from organic mixtures containing same by contacting the mixture against one side of a polymeric membrane and withdrawing at the other side a vaporous mixture having increased diene concentration. The polymer membrane is an acrylonitrile containing polymer which is (1) a copolymer of acrylonitrile or (2) a polymer blend containing acrylonitrile polymer. Exemplary of the polymer membranes are copolymers of acrylonitrile and styrene, vinyl acetate and N-vinylpyrrolidone and blends of polyacrylonitrile and polystyrene, polyvinyl acetate and polyvinylpyrrolidone. Exemplary of the organic mixtures is a mixture of butadiene and butene.

3,773,849

VAPOR PHASE ISOPRENE PROCESS

John O. Turner, West Chester, Pa. (% Sun Oil Company, P.O. Box 426, Marcus Hook, Pa. 19061)

No Drawing. Continuation-in-part of abandoned application Ser. No. 197,964, Nov. 11, 1972. This application Apr. 17, 1972, Ser. No. 244,847
Int. Cl. C07c *1/20*
U.S. Cl. 260—681 11 Claims

Isoprene may be prepared in one step by reacting methylal with isobutene or butene-2 in the vapor phase in the presence of a catalyst comprising alumina treated with BF_3. The use of this catalyst provides higher yields and selectivities with longer catalyst lifetimes than like processes taught by the prior art.

3,773,850

PROCESS FOR DEHYDROGENATION OF PROPANE

Larry G. Tischler, Angleton, and Milton S. Wing, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed June 28, 1971, Ser. No. 157,653
Int. Cl. C07c *3/00, 11/24*
U.S. Cl. 260—683.3 7 Claims

A process for dehydrogenating propane to provide higher selectivity to propylene by incorporating into the propane stream during dehydrogenation from about 2 to about 40 weight percent of H_2S or a compound which produces H_2S in situ.

3,773,851

VAPOR PHASE ISOPRENE PROCESS

John O. Turner, West Chester, Pa., assignor to Sun Research and Development Co., Marcus Hook, Pa.

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,917
Int. Cl. C07c *1/20*
U.S. Cl. 260—681 9 Claims

Isoprene may be prepared in one step by reacting methylal with isobutene or butene-2 in the vapor phase in the presence of a catalyst comprising boron phosphate. The use of this catalyst provides good yields and selectivities together with reduced amounts of isoprene precursors when compared to other vapor phase processes.

3,773,852

PROCESS FOR INCREASING THE REACTIVITY AT SOLID SURFACES

William J. Goyette, Brimfield, Ohio, and Stanley J. Supkis, Averill Park, N.Y., assignors to Norton Company, Worcester, Mass.

Filed Apr. 21, 1971, Ser. No. 136,146
Int. Cl. C01b *31/20;* C07c *5/02, 5/10*
U.S. Cl. 260—683.9 11 Claims

A process for attaining and maintaining a multi-fold increase in the normal catalytic activity of a massive solid type catalyst body. This is accomplished by subjecting the surface of the catalyst body to an essentially continuous, mild abrasive action imparted by pressing a moving coated or bonded abrasive tool against the catalyst surface while exposing the catalyst to the reactants and appropriate reaction conditions. The continuous abrasion prevents the deleterious formation of poison on the catalyst surface, increases the surface energy of the catalyst per se, and, it is believed, sweeps reactants onto and product off of the catalyst.

3,773,853

OLIGOMERIZATION OF MONO-OLEFINS

John F. Brennan, Des Plaines, and George R. Lester, Park Ridge, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of abandoned application Ser. No. 30,366, Apr. 20, 1970. This application Feb. 7, 1972, Ser. No. 224,231
Int. Cl. C07c *3/20*
U.S. Cl. 260—683.15 R 7 Claims

Olefinic compounds, and particularly mono-olefinic hydrocarbons, are oligomerized by treatment with a catalyst comprising a tantalum-containing compound at temperatures ranging from about ambient to about 250° C. and at pressures ranging from about 1 to about 100 atmospheres.

3,773,854

PRODUCTION OF ALTERNATING COPOLYMERS OF CONJUGATED DIENES AND CONJUGATED POLAR VINYL MONOMERS

Junji Furukawa, Kyoto, Yutaka Iseda and Kazuo Haga, Kodaira, and Nobuyuki Kataoka, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 740,342, June 26, 1968. This application Dec. 31, 1970, Ser. No. 103,178

Claims priority, application Japan, Mar. 28, 1968, 43/20,335

Int. Cl. C08d *1/14, 1/56*

U.S. Cl. 260—82.5 17 Claims

Novel alternating copolymers of conjugated dienes and conjugated polar vinyl monomers, wherein the conjugated diene unit is connected in a trans-1,4 form and the conjugated polar vinyl monomer unit and the conjugated diene unit are bonded alternately, are produced efficiently by copolymerizing these monomers in a non-aqueous medium at rather low temperature by using a catalyst system prepared by admixing a selected transition metal compounds and an organoaluminum halide in the presence of the polar vinyl monomer or another selected Lewis base. The alternating copolymer here obtained has a regular structure, on this account, for example, the butadiene/acrylonitrile elastic alternating copolymer can be oriented and crystallized under a highly stretched condition.

3,773,855

MODIFIED POLYOLEFIN COMPOSITIONS HAVING CONTROLLED MELT FLOW

Albert Schrage, East Orange, and Philip D. Readio, Sparta, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

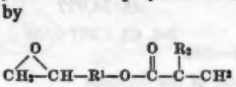
No Drawing. Original application Mar. 30, 1971, Ser. No. 129,629, now Patent No. 3,699,186. Divided and this application May 11, 1972, Ser. No. 252,380

Int. Cl. C08f *35/02, 29/02*

U.S. Cl. 260—827 8 Claims

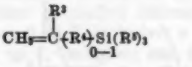
In modified polyolefin compositions prepared by reacting an olefin polymer with a polymerizable compound generally defined by

(I)



or

(II)



in the presence of an organic peroxide the met flow may be controlled by including in the reactants a modifier comprising acrylic or methacrylic esters of diols or triols. The reaction product is particularly suitable for being reinforced with filamentary material such as glass fibers or asbestos or as a coating on metallic surfaces.

3,773,856

PROCESS FOR THE PREPARATION OF UNSATURATED EPOXY ESTER COMPOSITIONS

Eiichiro Takiyama, 17–7–201, 2-chome, Minami Kamata, Ota-ku, Tokyo, Japan, and Sadakazw Hokamura, 125–11 Aza Kaminohara, Kamiwada, Yamato-shi, Kanagawa-ken, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 70,543, Sept. 8, 1970. This application Nov. 11, 1971, Ser. No. 197,935

Int. Cl. C08g *45/04*

U.S. Cl. 260—836 8 Claims

A process for preparing an unsaturated epoxy ester resin composition which can be cured by the addition of an organic peroxide and an accelerator even at room temperature, said process comprising heat reacting an epoxy component selected from the epoxy compounds having at least one glycidyl ether type epoxy group in their molecular structure, with a first acid component from the group consisting of the polymerizable unsaturated monobasic acids of 2–8 carbon atoms and a second acid component selected from the group consisting of the saturated monobasic acids, saturated polybasic acids, saturated polybasic acid anhydrides, polymerizable unsaturated polybasic acids and polymerizable unsaturated polybasic acid anhydrides, in the presence of a polymerization inhibitor and an esterification catalyst in an atmosphere of air or molecular oxygen.

3,773,857

POLYURETHANE WITH COPOLYMERS OF DIALKYL AMINO ALKYL ACRYLATES OR METHACRYLATES

Kunio Kondo, Kiyoshi Ichikawa, and Yasuji Nakahara, Moriyamashi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha

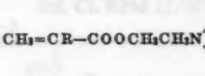
No Drawing. Filed May 17, 1972, Ser. No. 254,226

Claims priority, application Japan, May 19, 1971, 46/33,309

Int. Cl. C08g *41/04*

U.S. Cl. 260—859 R 8 Claims

Polyurethane compositions having improved stability to discoloring into yellowish color and to stickiness are provided by mixing 100 parts by weight of a polyurethane with from 0.5 to 15 parts by weight of a vinyl copolymer obtained by reacting a compound (A) selected from the group consisting of styrene, α-methylstyrene, vinyl chloride and α-methylvinyl chloride with a compound (B) represented by the general formula of



wherein R is hydrogen or CH_3, and R_1 and R_2 are individually CH_3 or C_2H_5, and having a mol ratio of composition of $B/A+B$ in the range of 0.15 to 0.80 and also an intrinsic viscosity as measured in benzene at 25° C., in the range of 0.05 to 0.70.

3,773,858

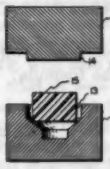
SUBSTANTIALLY VOID-FREE IMPACT MOLDED ARTICLE OF INFUSIBLE OXYBENZOYL POLYESTERS

Bernard E. Nowak, Lancaster, and James Economy and Steve G. Cottis, Buffalo, N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Original application May 28, 1969, Ser. No. 828,632, now Patent No. 3,662,052. Divided and this application Sept. 27, 1971, Ser. No. 184,191

Int. Cl. C08f *17/02*; C08g *39/10*

U.S. Cl. 260—873 10 Claims



Substantially void-free articles of infusible oxybenzoyl polyesters are described, which may be made by impact molding.

3,773,859

AMIDOTHIONOPHOSPHORIC ACID PHENYL ESTERS

Gerhard Schrader, Wuppertal-Cronenberg, Ingeborg Hammann, Cologne, and Bernhard Homeyer, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 7, 1970, Ser. No. 26,444
Claims priority, application Germany, Apr. 14, 1969, P 19 18 753.2

Int. Cl. A01n 9/36; C07f 9/24
U.S. Cl. 260—941 9 Claims

Amidothionophosphoric acid phenyl esters, i.e. amidothionophosphoric acid O-alkyl-O-(2-carbalkoxy-phenyl-)-ester wherein the phenyl radical carries one or two halogen or lower alkyl substituents, or one alkylmercapto, alkylsulphoxyl or alkylsulphonyl substituent, which possess arthropodicidal, especially acaricidal and insecticidal, properties and to a process for their production.

3,773,860

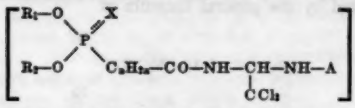
PHOSPHONOCARBOXYLIC ACID AMIDES

Hermann Nachbur, Dornach, and Arthur Maeder, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 5, 1971, Ser. No. 169,493
Claims priority, application Switzerland, Aug. 7, 1970, 11,913/70

Int. Cl. C07f 9/40
U.S. Cl. 260—943 7 Claims

Phosphonocarboxylic acid amides of the formula



are provided, wherein R_1 and R_2 each denote an alkyl halogenoalkyl or alkenyl radical with at most 4 carbon atoms, A denotes an optionally further substituted aryl or alkyl radical, X denotes a sulphur or an oxygen atom and *n* is an integer of 1 to 3. These compounds are useful for flameproofing of plastics or casting compositions which serve for the manufacture of shaped articles, such as foams, films or fibres.

3,773,861

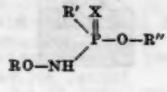
O-PHENYL-N-ALKOXY-(THIONO)-PHOSPHORIC (PHOSPHONIC) ACID ESTER AMIDES

Wolfgang Hofer, Wuppertal-Elberfeld, Ingeborg Hammann, Cologne, Bernhard Homeyer, Opladen, and Wilhelm Stendel, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 17, 1972, Ser. No. 281,361
Claims priority, application Germany, Sept. 1, 1971, P 21 43 756.9

Int. Cl. A01n 9/36; C07f 9/24
U.S. Cl. 260—949 7 Claims

O - phenyl-N-alkoxy-(thiono)-phosphoric(phosphonic) acid ester amides of the formula:



(I)

in which

R is alkyl with 1 to 6 carbon atoms,
R' is alkyl or alkoxy with 1 to 6 carbon atoms,
R'' is phenyl optionally substituted by at least one of halogen, nitro, cyano, lower alkyl, alkoxy, carbalkoxy and alkylmercapto with 1 to 6 carbon atoms, and
X is oxygen or sulfur,

which possess insecticidal, acaricidal, nematocidal, fungicidal and bactericidal properties.

3,773,862

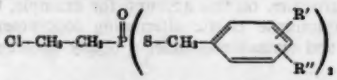
PHOSPHONIC ACID DITHIOL ESTERS

Ernst Beriger, Neuallschwil, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,126
Claims priority, application Switzerland, Sept. 28, 1970, 14,322/70

Int. Cl. C07f 9/40
U.S. Cl. 260—951 1 Claim

The present invention describes new phosphonic acid dithiol esters, a method for their preparation, compositions containing them and a method for regulating the abscission of fruits by applying these new esters or compositions containing them to fruit trees, olive, nut trees, berry bushes and grapes. The new phosphonic acid esters correspond to the formula



wherein R' is hydrogen, chlorine, —CF_3, —CN, methyl, ethyl, methoxy or ethoxy, R'' is hydrogen, chlorine, methyl or methoxy.

3,773,863

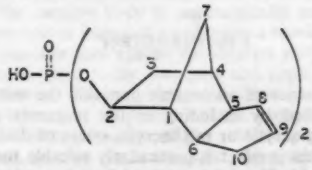
UNSATURATED TRICYCLIC SECONDARY PHOSPHORIC ESTERS

Yoshiaki Inamoto, Wakayama, and Takeji Kadono, Kainan, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

No Drawing. Filed June 23, 1971, Ser. No. 156,116
Claims priority, application Japan, June 24, 1970, 45/54,977

Int. Cl. C07f 9/08
U.S. Cl. 260—956 1 Claim

A compound of the formula



is prepared by reacting endo-dicyclopentadiene with phosphoric acid. The compound is useful as an additive for synthetic lubricants and hydraulic oils.

3,773,864

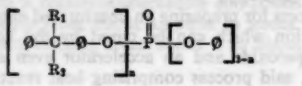
TRIARYL PHOSPHATES

James D. Sullivan, Webster Groves, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 16, 1970, Ser. No. 98,877

Int. Cl. C07f 9/12; C09k 3/00; C10m 1/46
U.S. Cl. 260—966 7 Claims

Organic phosphates of the structure



wherein R_1 is an alkyl of 1 to 13 carbon atoms, R_2 is an alkyl of 1 to 6 carbon atoms, and n is a number of from 1 to 3. These compounds are thermally stable viscous liquids useful as functional fluids such as lubricants and hydraulic fluids, and as components of such fluids.

3,773,865

METHOD FOR SYNTHESIS OF AMINOPHOSPHINE SULFIDES

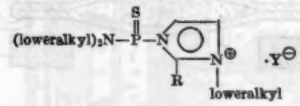
Henry Tolkmith, Midland, Mich., James N. Seiber, Davis, Calif., and Paul B. Budde, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 604,153, Dec. 23, 1966. This application Oct. 22, 1969, Ser. No. 868,594

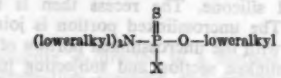
Int. Cl. A01n *9/36*; C07f *9/24*

U.S. Cl. 260—971 7 Claims

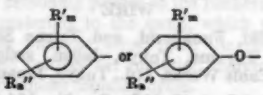
Optically active isomers of asymmetrical aminophosphine sulfides containing a P-imidazolyl radical and corresponding to the formula



are employed as intermediates in preparing other optically active enantiomers of various organophosphorus compounds corresponding to the formula



wherein the term "loweralkyl" represents an alkyl radical of from 1 to 4 carbon atoms, inclusive; Y represents an anion of an optically active camphorsulfonic acid, or an iodine, chlorine or bromine ion; R represents hydrogen or lower alkyl and X represents a radical of the formula



wherein R' represents loweralkyl or cyclohexyl; R" represents chloro, nitro or methyl mercapto; m represents an integer of from 0 to 2, inclusive; n represents an integer of from 0 to 3, inclusive; and the sum of $m+n$ represents an integer of from 0 to 3, inclusive.

3,773,866

PREPARATION OF ESTERS OF PHOSPHORUS ACIDS

Joseph W. Baker and Ignatius Schumacher, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed June 24, 1971, Ser. No. 156,563

Int. Cl. C07f *9/08*, *9/16*

U.S. Cl. 260—973 17 Claims

Halogen-containing esters of phosphorus acids are prepared by an improved process, whereby thiol- or hydroxyl-containing organic materials and phosphorus halides are reacted at specified temperatures in the presence of ammonium salts of inorganic and organic acids thereby providing high yields of substantially pure esters and allowing preparation of selected halogen-containing mono- and di-esters of phosphorus acids having substantially no side reactant contamination. The phosphorus esters are useful as intermediates in the preparation of plasticizers, oil additives and functional fluids.

ERRATUM

For Class 260—941 see: Patent No. 3,773,887

3,773,867

NUCLEAR FUEL

Neville Ronald Williams, Leckhampstead, near Newbury, and Henry Lloyd, Wantage, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed July 24, 1970, Ser. No. 58,172

Claims priority, application Great Britain, Aug. 6, 1969, 39,481/69

Int. Cl. G21c *21/04*

U.S. Cl. 264—.5 6 Claims

A method of forming a nuclear fuel body comprising a plurality of kernels of nuclear fuel material coated with fission product retaining material in a suitable matrix. The method comprises the steps of pressing the coated kernels which are overcoated with a layer of matrix material and a binder to form a compacted artefact whilst at the same time subjecting the kernels and matrix material to vibrations. The resulting compacted artefact is then cured and outgassed.

3,773,868

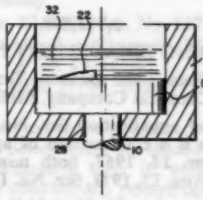
METHOD FOR MAKING CONTACT LENS BLANKS

Leonard Bronstein, Scottsdale, Ariz., assignor to Poly Optics, Inc.

Filed June 22, 1972, Ser. No. 265,276

Int. Cl. B29d *11/00*

U.S. Cl. 264—1 4 Claims



A method for making contact lens blanks comprising the fixing of optical lens material to an accurate shaft having a concentric axis of rotation and placing the shaft in a rotary machine and machining an optical interface configuration on the optical material fixed to the shaft so that the interface configuration is concentric with the axis of the shaft, then placing the shaft and the optical material fixed thereto in a mold and then placing hardenable material on said optical configuration in said mold and allowing the hardenable material to harden and become fixed to the interface configuration; removing the shaft from the mold and machining the materials thus fixed to the shaft into a lens blank by machining the periphery of the lens blank concentric with said axis of said shaft and by machining opposite ends of said lens blank normal to said axis; the method also relating to the machining of a second interface configuration on the first mentioned hardenable material and subsequently casting or placing a second hardenable material over the second interface configuration in accordance with the aforementioned molding method, then machining all three optical materials into a lens blank with the periphery and opposite ends of the blank accurate in relation to the axis of the shaft such

that the periphery of the blank is concentric with the axis of the shaft and opposite ends of the blank are normal to the axis of the shaft.

3,773,869

BULK-POLYMERIZATION METHOD INCLUDING A COLD-FORMING STEP

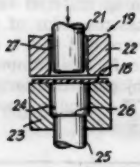
Moriji Kurobe, Nobuhiro Ito, and Hidero Takahashi, Nagoya, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho

Filed May 11, 1971, Ser. No. 142,195

Claims priority, application Japan, May 12, 1970, 45/40,823

Int. Cl. B29c 25/00

U.S. Cl. 264—22 14 Claims



This invention relates to a method of producing a resin article by polymerizing a bulk-polymerizable thermoplastic resin to an intermediate stage at which it has a large plastic deformation region. Polymerization is interrupted at this stage and the article is cold-formed. Finally, polymerization is continued until the resin is substantially completely polymerized.

3,773,870

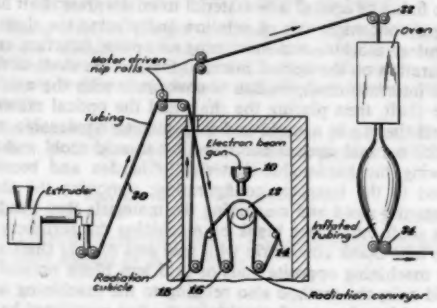
TUBING IRRADIATION PROCESS

Frank W. Spillers, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of appplication Ser. No. 861,208, July 14, 1969, which is a continuation of application Ser. No. 631,793, Apr. 18, 1967, both now abandoned. This application Aug. 13, 1971, Ser. No. 171,756

Int. Cl. B29d 23/04

U.S. Cl. 264—22 6 Claims



A process for irradiating plastic tubing such that the dosage imparted to the tubing is uniform as to depth and area. The tubing is passed to a flattening zone, then to an irradiation zone, then reversed, inverted, and the sequence is repeated a plurality of times. The flattening zone comprises a flat roller or equivalent means. The irradiation zone comprises an electron beam gun or an equivalent irradiation source. The reversing and inverting is accomplished by a series of wheels and guide rollers arranged adjacent to the flat rollers.

3,773,871

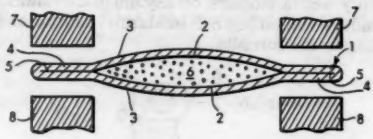
METHOD FOR FORMING IMPLANTABLE CAPSULES WITH SILICONE RUBBER

Edward W. Merrill, Cambridge, Mass., assignor to Hans H. Estin, Leonard W. Cronkhite, Jr., and William W. Wolbach, trustees of the Charles River Foundation

Filed Nov. 19, 1971, Ser. No. 200,560

Int. Cl. B29c 24/00

U.S. Cl. 264—22 10 Claims



A capsule filled with a medicament is formed by first selectively cross-linking with ionizing radiation a silicone composition to form a cross-linked recess surrounded by uncross-linked silicone. The recess then is filled with medicament. The uncrosslinked portion is joined, either with itself or with the uncrosslinked portion of a mating, partially crosslinked section and subjecting just the uncrosslinked portion to ionizing radiation to effect crosslinking thereof.

3,773,872

METHOD OF MANUFACTURING A COVERED WIRE

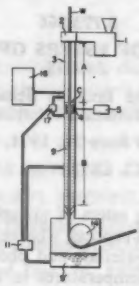
Setsuya Isshiki, Funabashi, and Tetsuo Shiromizu and Yasutugu Toyama, Tokyo, Japan, assignors to The Fujikura Cable Works, Ltd., Tokyo, Japan

Filed Sept. 17, 1971, Ser. No. 181,345

Claims priority, application Japan, Sept. 21, 1970, 45/82,805

Int. Cl. B29c 25/00

U.S. Cl. 264—23 9 Claims



A method of manufacturing a covered wire which comprises the steps: coating a conductor with insulating material such as uncross-linked polyethylene, unvulcanized rubber, etc. through extrusion molding, and curing

the resulting covering layer by applying ultrasonic wave energy thereto; as well as apparatuses relevant to said method.

3,773,873

METHOD OF INJECTION MOLDING FOAMABLE PLASTIC WITH MINIMIZED WASTAGE

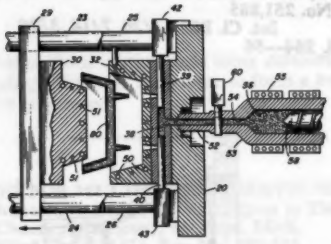
Albert Spaak, Little Falls, and Clifford L. Weir, Wayne, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 811,271, Feb. 19, 1969, which is a continuation-in-part of application Ser. No. 679,387, Oct. 31, 1971, both now abandoned.

This application June 22, 1970, Ser. No. 48,468

Int. Cl. B29d *27/00*

U.S. Cl. 264—37 8 Claims



This disclosure is directed to a method for injection molding. Premature foaming and setting of foamable molding materials is prevented by accomplishing the injection of the foamable molding material into a mold cavity having a gaseous substance therein at a pressure in excess of that required to prevent foaming of the molding material. Planned wastage of molding material is minimized by providing pistons in the runners which carry the molding materials to the mold, which pistons force excess molding material away from the mold so as to recompress and recover the material, thereby to be used in the next subsequent molding cycle.

3,773,874

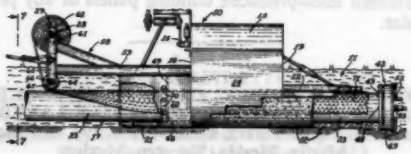
METHOD FOR LINING A CONTINUOUS CONCRETE PIPE

Joe E. Long, 2535 S. Main St., Santa Ana, Calif. 92707

Filed July 20, 1971, Ser. No. 164,395

Int. Cl. E04b *1/16*

U.S. Cl. 264—32 8 Claims



A method for forming a continuous concrete pipe having an integrally formed lining extending over part or all of the surface of its bore. The invention relates to a continuous concrete pipe laying machine which travels along in a trench and which wraps a continuous sheet of impervious liner material about an inflatable core and then continuously deposits cementitious material into the trench to surround the liner and core. When the cementitious material has set, the core is deflated and removed leaving a formed concrete pipe with liner in place in the trench.

3,773,875

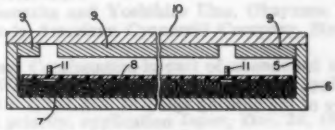
METHOD OF MAKING FOAMED ARTICLES HAVING A REINFORCING MEMBER

Peter C. Lammers, Doylestown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Apr. 1, 1968, Ser. No. 717,544

Int. Cl. B29d *27/04*

U.S. Cl. 264—45 2 Claims



This invention relates to a method of making foamed articles having a reinforcing member by foaming a foamable material in a mold cavity and floating the reinforcing members upward to the desired position and retaining them there until the foam is set, the foaming occurring either in the presence of a preformed skin or under conditions to form an integral skin.

3,773,876

METHOD FOR MAKING PACKAGING MATERIAL

Klaus Ferdinand Rath, Am Welher 20, Opladen, Germany, and Hans-Jürgen Rückert, Genkler Hardt 10, Lantenbach, Germany

Filed Mar. 23, 1971, Ser. No. 127,163

Claims priority, application Germany, Mar. 26, 1970, P 20 14 667.2

Int. Cl. B29d *27/00;* B32b *27/10*

U.S. Cl. 264—47 1 Claim

A process for the production of a composite packaging material with two outer layers of sheet-form materials bonded to an intermediate layer in which a layer of plastics granulate is continuously poured onto a web from a lower one of the two outer layers. A web forming the upper outer layer is applied to the plastics granulate layer A bonding agent in the form of a thermoplastic powder is applied to the inside of the outer layers. The whole is heated to a foaming temperature and then left to cool.

The process is carried out in an apparatus which has delivery rollers for the two outer layers and adjustable feed distributors for the granulate and the bonding agent and a heating device. A pair of rollers is arranged in front of the heating device to limit, dam and circulate the granulate.

3,773,877

METHOD FOR EXTRUSION OF CELLULAR-CORE INTEGRAL-SKIN PLASTICS

Robert F. Baker and Ebon P. Weaver, Naugatuck, Conn., assignors to Uniroyal, Inc., New York, N.Y.

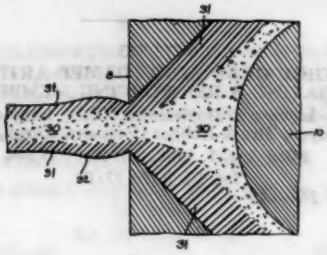
Original application July 15, 1969, Ser. No. 841,900, now Patent No. 3,608,145, dated Sept. 28, 1971. Divided and this application Apr. 19, 1971, Ser. No. 135,046

Int. Cl. B29d *23/04, 27/00*

U.S. Cl. 264—48 2 Claims

A die and method for plastic extrusion are disclosed herein in which a heater element within the die is maintained at a temperature above the decomposition tempera-

ture of a blowing agent incorporated in a plastic melt to be extruded, and the body and exit orifice of the die are



maintained at a temperature below the decomposition temperature of the blowing agent.

3,773,878

METHOD OF PRODUCING SELF-BREATHING COMPOSITE ELECTRODE FOR FUEL CELLS

Horst Jahnke, Gerlingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 16, 1971, Ser. No. 115,784
Claims priority, application Germany, July 7, 1967, P 16 71 711.6
Int. Cl. B29d *27/00*; H01m *27/04*
U.S. Cl. 264—49 **9 Claims**

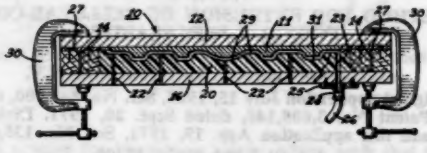
A catalyst is first formed by combining polyparaphenyl or a cobalt-, copper-, nickel- or iron-phthalocyanine with a finely divided carbonaceous conductor. This catalyst is then mixed with a pulverulent organic polymeric binder and a pore-forming agent. The mixture is compressed into a compact structure and a uniform layer of a pulverulent hydrophobic polymer is applied to one major face of said structure, followed by sintering and dissolving the pore-forming agent out of the product. A porous electrode is obtained having one hydrophilic and one hydrophobic major face. The porous electrode thus obtained has a hydrophilic and a hydrophobic major face and is suited for use in a fuel cell which is operated with an acid electrolyte, the hydrophilic face being in contact with the electrolyte and the hydrophobic face being exposed to the air.

3,773,879

METHOD OF MAKING A CONTOUR MOLD

Willett C. Munsil, 3331 N. 10th Ave. 85013, and Robert L. Silvey, 126 W. Northview 85021, both of Phoenix, Ariz.

Filed Dec. 31, 1970, Ser. No. 103,054
Int. Cl. B29c *1/02*; B29d *27/04*
U.S. Cl. 264—54 **6 Claims**



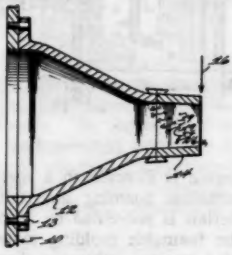
A method of fabricating a glove type mold wherein a deformable sheet of uniform thickness is made to conform to a distinctive surface of an object while a hardenable material is caused to conform closely to the surface of the deformable sheet duplicating the distinctive surface of the object. After hardening of the material the sheet is stripped away from the hardened material and this material is then placed opposite but in a given spaced relationship to said distinctive surface of said object so both duplicate and object have distinctive surfaces facing each other. The spacing between the distinctive surfaces is then filled with mold material.

3,773,880

SLICING A COLUMN INTO SLABS AND REUNITING THE SLABS IN A TAPERED PORTION OF THE EXTRUSION DIE

Paul S. Kelsey, Delray Beach, Fla., assignor to The Susquehanna Corporation, Alexandria, Va.

Continuation-in-part of abandoned application Ser. No. 18,173, Mar. 10, 1970. This application May 10, 1972, Ser. No. 251,885
Int. Cl. B28b *3/20, 7/14, 3/26*
U.S. Cl. 264—56 **9 Claims**



Bolted to the auger barrel of a brick extruding machine is an internal tapering die base to which is clamped an internal tapering shaper cap whose cross section upstream of its mouth is provided with tensioned wires which slice the column longitudinally as it proceeds through said shaper cap. Downstream of the horizontal wires, the continued taper of the shaper cap forces into cohesion, by tremendous pressure, the adjacent longitudinal wire cut surfaces of the severally created adjacent slabs, sufficiently enough to permit each transversely cut section, of the resulting multi-sectioned extruded unit, to be safely man- or machine-handled and to be processed through its subsequent drying and firing cycles like normal full-size brick, units that can at any time after firing be tapped apart on the original wire cut lines to create brick slabs, each e.g., 3/8" to 1" thick, which are especially economical and useful for facing the surfaces of industrialized mass-produced building panels of any practical size.

3,773,881

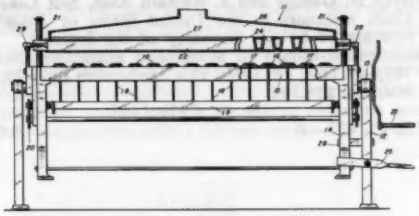
PROCESS OF MAKING CANDLES BY SEQUENTIALLY CASTING DIFFERENT WAX LAYERS

Luis A. Rodriguez Perera, Calle 60, No. 293, Col Alcala Martin, Merida, Yucatan, Mexico

Filed June 14, 1971, Ser. No. 152,781
Claims priority, application Mexico, June 12, 1970, 120,019; Oct. 7, 1970, 122,563
Int. Cl. B29c *5/08*; C11c *5/02*
U.S. Cl. 264—155 **1 Claim**

A process for manufacturing frusto-conical candle sticks that comprises generally the steps of pouring a material into a plurality of molds crossed by taper punch-

ers, lowering the taper punchers, inserting wicks and corresponding wick holders, raising a plate that includes the candle molds and removing the finished product. The



process includes plural casting steps using different waxes and perforating a first wax shell layer to form a hole into which a wick is inserted.

3,773,882

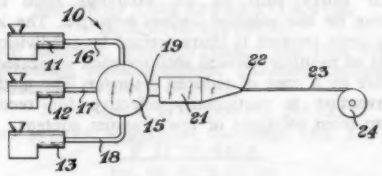
METHOD FOR MULTILAYER COEXTRUSION

Walter J. Schrenk, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Oct. 1, 1971, Ser. No. 185,534

Int. Cl. B29d *9/00*; B29f *3/06*

U.S. Cl. 264—171 **3 Claims**



Multilayer coextrusion method is shown which provides a relatively easily obtained symmetry control of the layer thickness which is particularly suitable when the desired laminate contains many layers wherein streams of first and second thermoplastic material are divided into substreams with the resulting substreams being combined at locations which are generally disposed on an arc of a circle with the interdigitated substreams being thereafter deformed by inward flow to a discharge location generally disposed at the center of the said circle.

3,773,883

PREPARING CIGARETTE FILTERS

Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, and Michael Bruce Mitchell, London, England, assignors to Molins Limited, London, England

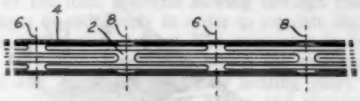
Filed July 14, 1971, Ser. No. 162,513

Claims priority, application Great Britain, July 17, 1970, 34,754/70

Int. Cl. A24c *5/50*; B29c *17/00*

U.S. Cl. 264—151 **7 Claims**

Cigarette filters are made by passing a continous rod of filter material continuously through a moving die to form a continuous filter element having a repeated pattern of staggered grooves so arranged that the continuous filter element can be cut at regular intervals to form individual filter elements each having in its peripheral surface a



number of grooves extending substantially axially alternately from opposite ends of the element.

3,773,884

PROCESS FOR FIBERS CONTAINING UNIFORM DISTRIBUTION OF INSOLUBLE SOLID ADDITIVES THEREIN

Yukio Shimosaka and Yoshihiro Uno, Okayama, Japan, assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 99,517, Dec. 18, 1970. This application Apr. 7, 1972, Ser. No. 242,249

Claims priority, application Japan, Dec. 20, 1969, 44/102,826

Int. Cl. D01f *7/00*

U.S. Cl. 264—182 **10 Claims**

A process for preparing fibers which comprises (a) preparing a polymer solution in a solvent therefor, (b) preparing a solution of a solid property-modifying additive in an organic liquid which is insoluble in the polymer solution, (c) dispersing the additive solution and polymer solution by high shear mixing, (d) immediately wet spinning the dispersion into fiber, and (e) thereafter removing said organic liquid from the formed fiber by evaporation or washing to leave a uniform distribution of insoluble solid property-modifying additive in the fiber.

3,773,885

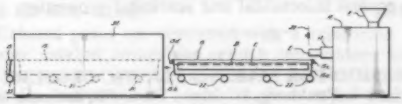
PROCESS FOR CURING ELASTOMER EXTRUDATES

Robert L. Boone, P.O. Box 11101, Houston, Tex. 77016

Filed Aug. 4, 1971, Ser. No. 168,848

Int. Cl. B29c *25/00*

U.S. Cl. 264—236 **8 Claims**



Process for curing elastomer extrudates, wherein an elastomer extrudate of a predetermined length is immediately cooled after extruding same in a liquid bath having a specific gravity related to the specific gravity of the extrudate so that there is a substantially zero gravity effect on the extrudate and to terminate the heat history of the extrudate prior to the application of pressure and heat thereto for curing same.

3,773,886

PROCESS FOR FORMING SIMULATED MARBLE

Kenneth Arnold Starr, Culver City, and George Haenl Bierdemann, Los Angeles, Calif., assignors to Fabri-Netics, Ltd., Gardena, Calif.

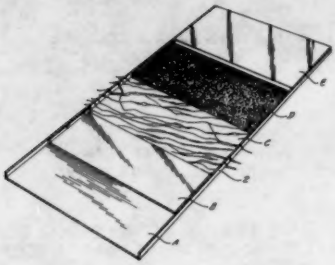
Filed Nov. 24, 1971, Ser. No. 201,881

Int. Cl. B28b *1/32*; B29c *9/00*

U.S. Cl. 264—245 **14 Claims**

A process for forming simulated marble (hereinafter referred to as "cultured marble") including applying a polyester gel-coat to a mold surface followed by successively applying vinyl and polyester veining and spatter compositions containing low-boiling solvents over the gel-

coat with evaporation of substantial amounts of solvent from the respective compositions during the applying



steps, then filling the remainder of the mold with resin and curing.

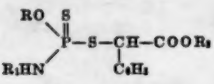
3,773,887

S-(α-ALKOXYCARBONYLBENZYL)-DITHIOPHOSPHORIC ACID ESTER AMIDES

Claus Stolzer, Wuppertal-Vohwinkel, and Ingeborg Hammann, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 5, 1971, Ser. No. 186,813
Claims priority, application Germany, Oct. 10, 1970, P 20 49 812.8
Int. Cl. A01n *9/36;* **C07f** *9/16, 9/24*
U.S. Cl. 260—941 **7 Claims**

S-(α-alkoxycarbonylbenzyl)-dithiophosphoric acid ester amides of the general formula



(I)

in which

R is an alkyl or alkoxyalkyl radical with up to 6 carbon atoms in each alkyl group,

R_1 is an alkyl or alkenyl radical with up to 6 carbon atoms, and

R_2 is an alkyl radical with up to 4 carbon atoms,

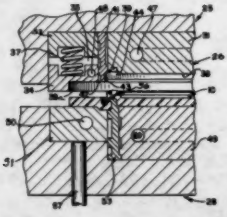
which possess insecticidal and acaricidal properties.

3,773,888

METHOD FOR MAKING PLASTIC CLOSURE

Herbert S. Ruekberg, Highland Park, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Original application Oct. 27, 1969, Ser. No. 869,710, now Patent No. 3,642,408, dated Feb. 15, 1971. Divided and this application June 10, 1971, Ser. No. 151,907
Int. Cl. B29f *1/14*
U.S. Cl. 264—296 **4 Claims**



A plastic closure having a weakening line along which the closure is separable. The closure is formed in a mold which includes means for forming the weakening line of a predetermined thickness. The weakening line is initially molded to a thickness in excess of a predetermined thickness. The predetermined thickness of the weakening line is achieved by removal of the excess thickness during opening of the mold.

3,773,889

ION EXCHANGE PROCESS

D'Arcy R. George and J. Richard Ross, Salt Lake City, Utah, assignors to the United States of America as represented by the Secretary of the Interior

Continuation-in-part of abandoned application Ser. No. 783,663, Dec. 13, 1968. This application June 30, 1971, Ser. No. 158,306
Int. Cl. C02b *1/42*
U.S. Cl. 423—6 **4 Claims**

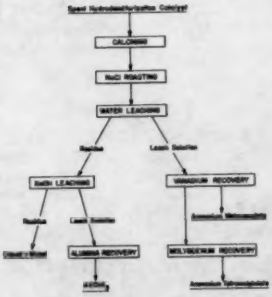
A method for recovering metals from a solution or slurry comprising countercurrently contacting the solution or slurry with an ion exchange resin column operating on the solution upflow principle. The ion exchange resin column is characterized by subdivision into a series of multiple vertical sections each separated from the other by a zone of reduced diameter. The method of the invention is particularly effective for recovering uranium from solutions of low uranium content.

3,773,890

PROCESS FOR EXTRACTING VALUES FROM SPENT HYDRODESULFURIZATION CATALYSTS

Joseph S. Fox, Lewiston, N.Y., and John E. Litz, Lakewood, Colo., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 14, 1972, Ser. No. 244,136
Int. Cl. C01f *7/02;* **C01g** *31/00, 39/00, 51/00, 53/00*
U.S. Cl. 423—58 **10 Claims**



A process for extracting vanadium, molybdenum, alumina, and at least one of the values selected from a group

consisting of cobalt and nickel from a spent hydrodesulfurization catalyst containing the same and used for decreasing the sulfur contents in crude oils. The process comprises calcinating the catalyst to remove carbon followed by roasting with NaCl to convert vanadium and molybdenum values to a water soluble form. The roasted product is leached with water to remove vanadium and molybdenum values and the residue treated with an alkaline solution to dissolve aluminum values. The aluminum containing solution is removed from the residue containing nickel and/or cobalt values and reacted with an acid to precipitate aluminum hydroxide. The molybdenum and vanadium values may be recovered from the leach solution by extraction with a tertiary amine.

3,773,891

ACID LEACHING OF LATERITIC ORES

Charles Edward O'Neill, Port Credit, Ontario, Canada, assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,730

Int. Cl. C01g *51/10, 53/10*

U.S. Cl. 423—139 **36 Claims**

Nickeliferous or cobaltiferous lateritic ores are separated into limonitic and silicate fractions, and the limonitic fraction is pressure leached with an aqueous sulfuric acid solution to provide a partially-loaded leach solution while the nickel or cobalt values in the silicate fraction are selectively reduced and then leached with the partially-loaded leach solution to provide a pregnant solution from which nickel or cobalt are recovered.

3,773,892

METHOD AND APPARATUS FOR BURNING GYPSUM

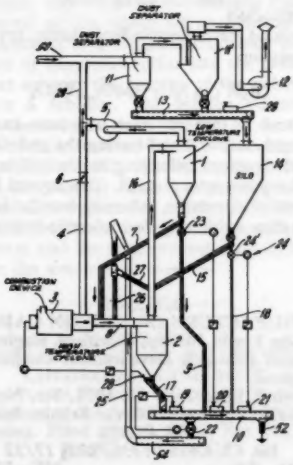
Gerhard Reimann, Mulheim (Ruhr), and Otto Friedrich Wiechmann, Recklinghausen, Germany, assignors to Rheinstahl AG, Essen, Germany

Filed Sept. 6, 1972, Ser. No. 286,821

Claims priority, application Germany, Oct. 23, 1971, P 21 52 940.8

Int. Cl. F27b *15/00*

U.S. Cl. 423—171 **9 Claims**



A method for burning gypsum in a heating gas current formed by heating a gas in a cyclone burning plant using a plurality of cyclones arranged in series comprises measuring the crystal water content of the material which issues from the individual cyclone stages and varying the portions of the total material flowing through the individual stages quantitatively in order to regulate the characteristics of the end product. The apparatus includes a plurality of cyclone heaters in which the raw material is treated and which are heated by heating gases which are generated in a combustion device and circulated in series through the cyclone heaters. A conveyor is movable through a path intercepting the discharges from each of the cyclone heaters extending from the highest temperature stage to the lowest temperature stage and a measuring device is arranged after each discharge to regulate the amount of the discharge in order to vary the constituency of the material fed to the conveyor or in accordance with the conditions which have been sensed by the measuring instruments.

3,773,893

PROCESS FOR REMOVING SULFUR DIOXIDE FROM GAS STREAMS USING MOLTEN THIOCYANATES

Dorothy J. Mandelin, Los Angeles, Calif., assignor to Occidental Petroleum Corporation, Los Angeles, Calif.

Filed Feb. 24, 1970, Ser. No. 13,515

Int. Cl. B01d *53/34*

U.S. Cl. 423—210 **17 Claims**

Molten inorganic thiocyanates preferably potassium thiocyanates and mixtures of potassium and sodium thiocyanates are used as a scrubbing solvent to remove sulfur dioxide from stack gases at stack gas temperatures. Inclusion of reactive solutes in the molten thiocyanate system to convert the absorbed sulfur dioxide to other sulfur derivatives materially increases the capacity of the thiocyanate for the sulfur dioxide.

3,773,894

NITROGEN OXIDE CONVERSION USING REINFORCED NICKEL-COPPER CATALYSTS

Leonard S. Bernstein, Iselin, Anantha K. S. Raman, Millington, and Eric E. Wigg, Westfield, N.J., assignors to Esso Research and Engineering Company

Filed July 22, 1971, Ser. No. 165,115

U.S. Cl. 423—213.5 **10 Claims**

Exhaust gases are contacted with a reinforced nickel-copper catalyst comprising a high temperature and oxidation resistant metallic reinforcing member and a catalytically active nickel-copper surface layer comprising about 40 to about 95% by weight of nickel and about 5 to about 60% by weight of copper.

3,773,895

REMOVAL OF ACIDIC GASES FROM GASEOUS MIXTURES

Harry Thirkell, Middlesbrough, England, assignor to Harry Thirkell, Middlesbrough, England

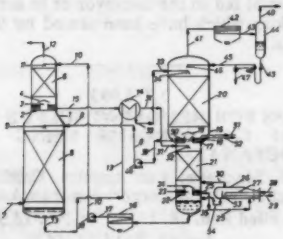
Continuation of application Ser. No. 56,174, July 9, 1970, which is a continuation of application Ser. No. 587,274, Oct. 17, 1966, both now abandoned. This application Dec. 15, 1971, Ser. No. 208,499

Int. Cl. B01d *53/34*

U.S. Cl. 423—223 **11 Claims**

1. In a process for the removal of acidic gases from gaseous mixtures which comprises the steps of passing the gaseous mixture through a first absorption zone in contact with a first absorbent solution comprising hot aqueous solution of a non-volatile, acid-gas absorbing reagent selected from alkali metal carbonates and alkali metal phosphates and a volatile, acid-gas absorbing alkanolamine to remove a major fraction of the acidic

gases, passing the resulting gaseous mixture through a second absorption zone in contact with a second absorbent solution comprising a cooled aqueous solution of the same volatile, acid-gas absorbing alkanolamine as is present in said first absorbent solution to remove substantially the remaining acidic gases from the gaseous mixture, passing the spent solution containing acidic gases dissolved therein from the second absorption zone to a second regeneration zone, passing a stream of steam in contact with the spent aqueous solution of said volatile, acid-gas absorbing alkanolamine in the second regeneration zone to strip the acidic gases therefrom, discharging the stripping steam from the second regeneration zone,



passing the spent solution containing acidic gases dissolved therein from the first absorption zone to a first regeneration zone, passing the stripping steam discharged from the second regeneration zone in contact with the spent aqueous solution of said non-volatile, acid-gas absorbing reagent and said volatile, acid-gas absorbing alkanolamine in the first regeneration zone to strip the acidic gases therefrom, returning the regenerated solutions from their respective regeneration zones to their respective absorption zones, the improvement comprising passing supplementary stripping steam to the first regeneration zone and heating the spent absorbent solution leaving the second absorption zone by indirect heat exchange with hot spent absorbent solution leaving the first absorption zone.

3,773,896

WASHING AGENT AND A PROCESS FOR WASHING ACIDIC COMPONENTS FROM A GAS STREAM

Gerhard Preusser, Essen, and Martin Schulze, Neviges, Germany, assignors to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,594
Int. Cl. B01d *53/34*
U.S. Cl. 423—226 **5 Claims**

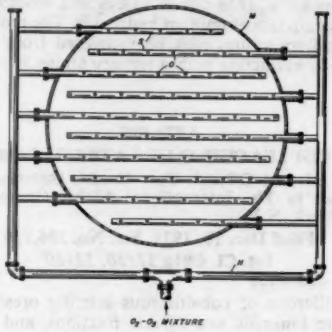
The washing agent includes a carboxylic acid amide of morpholine preferably containing between 1 and 7 carbon atoms in the carboxylic acid chain. The gaseous acidic components are absorbed by the carboxylic acid amide of morpholine and may be removed therefrom by distillation at about 80° C. The process for washing the gaseous acidic components such as carbon dioxide, hydrogen sulfide and hydrogen cyanide from a gas stream includes treating the gas stream with a washing agent that absorbs at least a portion of the gaseous acidic components. The washing agent includes one or more carboxylic acid amides of morpholine in a diluted or undiluted form. The gaseous acidic components are absorbed by the carboxylic acid amides of morpholine and can be removed therefrom by distillation at relatively low temperatures. The carboxylic acid amides of morpholine selectively absorb between 7 and 8 volumes of hydrogen sulfide for each volume of carbon monoxide absorbed from the gas stream.

3,773,897

PROCESS FOR REMOVING NITRIC OXIDE FROM GASEOUS MIXTURES

Marvin C. Fields, Wilkins Township, Allegheny County, and Ladislaus Walter Sumansky, Library, Pa., assignors to United States Steel Corporation

Filed Oct. 19, 1970, Ser. No. 81,945
Int. Cl. B01d *53/34*
U.S. Cl. 423—235 **12 Claims**



A continuous process for removal of nitric oxide from coke oven gas with ozone even when its mol ratio to NO is as low as 2/1. The ozone is introduced uniformly over the cross section of the coke oven gas.

3,773,898

COMPOUND FERROELECTRIC-FERROELASTIC CRYSTAL

Keiichiro Aizu, Tokyo, Akio Kumada, Kodairo, Hiroshi Yumoto, Kokubunji, Sakichi Ashida, Fuchu, and Yoshio Furuhata, Kodaira, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of abandoned application Ser. No. 38,653, May 22, 1970. This application Aug. 25, 1971, Ser. No. 174,810
Claims priority, application Japan, Aug. 2, 1967; 42/49,674; Sept. 18, 1967, 42/59,450
Int. Cl. C01g *39/00*
U.S. Cl. 423—263 **4 Claims**

A compound ferroelectric-ferroelastic crystal defined by the expression

$$(R_xR'_{1-x})_2O_3 \cdot 3MO_{1-e}W_eO_3$$

where R and R′ are at least one rare earth element, X=0–1.0 and e=0–0.2 and having the gadolinum molybdate crystal structure belonging to the orthorhombic system and the point group mm2. The crystal has unequal a and b lattice constants, wherein $b-a/2a$ is more than 1.0×10^{-3}, thus exhibiting ferroelectric-ferroelastic properties.

3,773,899

MANUFACTURE OF SILICON CARBIDE

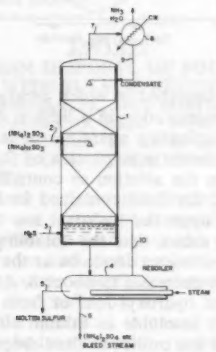
Thomas John Lewis, Bishops Stortford, England, assignor to National Research Development Corporation, London, England

No Drawing. Filed June 14, 1971, Ser. No. 153,017
Claims priority, application Great Britain, June 12, 1970, 28,492/70
Int. Cl. C01b *31/36;* B01j *17/32*
U.S. Cl. 423—346 **16 Claims**

A process for the production of silicon carbide whiskers comprising maintaining a silicon-containing vapour and a carbon-containing vapour at a temperature of at least

1,100° C. in a reaction zone in the presence of a substrate whereby silicon carbide whiskers are deposited upon the substrate, and is characterised by providing a super-saturated concentration of an iron-containing vapour in the reaction zone so that whisker growth may continue even when the substrate is substantially entirely coated with whiskers giving consequent increase in yield and process efficiency.

3,773,900
SO_2 RECOVERY AND CONVERSION TO ELEMENTAL SULFUR
Edward S. Roberts, Ridgewood, and Sidney B. Tuwiner, Baldwin, N.Y., assignors to Treadwell Corporation, New York, N.Y.
Filed Jan. 26, 1972, Ser. No. 220,892
Int. Cl. B01b *3/26;* **C01b** *17/02;* **C01c** *1/02*
U.S. Cl. 423—356 **4 Claims**



Sulfur dioxide is absorbed from gases containing it, for example stack gases from the combustion of sulfur-containing coal or oil, in an aqueous solution of ammonium sulfite and bisulfite, preferably with a molar concentration ratio of SO_2 to NH_3 between 0.6 and 0.8. The solution of ammonium sulfite and bisulfite are stripped in a column under positive pressure with a rising stream of water vapor and gas containing hydrogen sulfide or carbonyl sulfide, which act as sulfiding gases. The column is operated at a temperature which is above the melting point of elemental sulfur and the sulfiding gas is introduced at or near the bottom of the column, for example above a reboiler. The molten elemental sulfur flows down the column as a liquid. The overhead from the column contains ammonia and water vapor substantially free of H_2S or SO_2. Similarly, the bottom of the column and the reboiler contain ammonium sulfate and other salts of ammonium but substantially no SO_2. The operation of this column obviates the use of an expensive organic solvent and the regeneration thereof, as has been employed in the art.

3,773,901
SYNTHESIS OF TRIFLUORAMINE OXIDE AND CHLORODIFLUORAMINE
Carl J. Schack and Donald Pilipovich, Woodland Hills, Calif., assignors to Rockwell International Corporation
No Drawing. Filed Apr. 1, 1968, Ser. No. 718,987
Int. Cl. C01b *21/20*
U.S. Cl. 423—386 **4 Claims**

A new synthesis of chlorodifluoramine and trifluoramine oxide by the reaction of oxychlorinetrifluoride and difluoramine.

3,773,902
PROCESS FOR THE PREPARATION OF POTASSIUM CARBONATE HYDRATE
Ulrich Neumann, Rodenkirchen, Germany, assignor to Chemical Dr. A. Zieren, GmbH & Co. KG, Cologne Braunsfeld, Germany
Filed May 26, 1971, Ser. No. 146,986
Claims priority, application Germany, May 26, 1970, P 20 25 610.4
Int. Cl. C01d *7/00*
U.S. Cl. 423—421 **10 Claims**

An economically feasible continuous process for the production of potassium carbonate by the carbonation of a potassium hydroxide solution with CO_2 on a commercial scale which is trouble-free and requires simple apparatus in which a stream of the potassium hydroxide solution is fed to a reaction zone where it is reacted with CO_2 at 80–135° C. and 130 torr-atmospheric pressure; sufficient water is evaporated from the solution in the reaction zone to precipitate $K_2CO_3 \cdot 1\frac{1}{2}H_2O$; a stream of the precipitated potassium carbonate and a portion of the solution is removed from the reaction zone as a slurry; the liquid and solid phases of the slurry are separated; and the separated liquid phase is recycled to the reaction zone, preferably after heating to a temperature above that of the reaction zone.

3,773,903
METHOD OF MANUFACTURING DIAMOND CRYSTALS
Tatsuo Kuratomi, 2–18, 4-chome, Hamatake, Chigasaki-shi, Kanagawa-ken, Japan
No Drawing. Filed Mar. 1, 1972, Ser. No. 231,011
Claims priority, application Japan, Mar. 25, 1971, 46/16,899
Int. Cl. C01b *31/06*
U.S. Cl. 423—446 **11 Claims**

Diamond crystals are produced by subjecting to elevated temperatures and pressures a mixture of a nondiamond form of carbon, together with barium carbide, which serves as the solvent for conversion to the diamond form. In preferred embodiments, a metal boride catalyst is utilized, or powdery diamond seed crystals are used to encourage the growth of diamond crystals.

3,773,904
PROCESS FOR THE PRODUCTION OF CARBON BLACK FROM COAL
Madhur Srinivas Iyengar, Rezaul Haque, Ranjit Kumar Chakrabarti, Manindra Lal Dutta, and Abhay Kumar Singh, Jorhat, Assam, India, assignors to Council of Scientific & Industrial Research, New Delhi, India
Filed Aug. 10, 1971, Ser. No. 170,541
Int. Cl. C09c *1/48*
U.S. Cl. 423—449 **8 Claims**

A process for producing carbon black from crushed coal. The coal is carbonized in a fluidized bed in a refractory reactor at 1200° C. The char is removed in a cyclone separator and the remaining flue gases laden with carbon black are passed through a water scrubber, an electrostatic precipitator and a further cyclone to remove and collect the carbon black.

3,773,905
METHOD OF PREPARING HIGH-PURITY AMMONIUM ALUMINUM HEXAFLUORIDE
Ronald H. Arendt, Schenectady, N.Y., assignor to General Electric Company
No Drawing. Filed Jan. 4, 1971, Ser. No. 103,794
Int. Cl. C01c *1/16, 1/28;* **C01f** *7/00*
U.S. Cl. 423—465 **2 Claims**

Ammonium aluminum hexafluoride suitable for the production of semiconductor substrates of ultra high

purity aluminum nitride is prepared by reacting aluminum with a stoichiometric excess of HF to provide an aqueous solution of H_3AlF_6 and HF, and neutralizing this solution with NH_4OH and raising the pH to about 9 and thereby forming and precipitating $(NH_4)_3AlF_6$.

3,773,906

MANUFACTURE OF AQUEOUS AMMONIUM IODIDE SOLUTIONS

Rolf Platz, Mannheim, and Werner Fuchs and Guenther Schoenaich, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 7, 1972, Ser. No. 232,523

Int. Cl. C01c *1/16*

U.S. Cl. 423—470 **4 Claims**

Aqueous ammonium iodide solutions are obtained by quenching the gaseous reaction mixture resulting from the reaction, at from 300 to 1,000° C., of iodine with ammonia in an excess of from 10 to 20 times molar, with water at temperatures above 70° C.

3,773,907

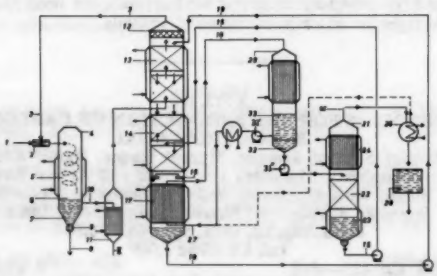
PROCESS FOR THE PRODUCTION OF PURE CONCENTRATED HF FROM IMPURE FLUOSILICIC ACID

Walter Blochl, Karlsruhe, and Bonifaz Oberbacher, Hofheim, Taunus, Germany, assignors to Buss AG, Basel, Switzerland

Continuation-in-part of application Ser. No. 807,021, Mar. 13, 1969. This application Mar. 9, 1971, Ser. No. 122,410

Int. Cl. C01b *7/00, 7/22, 33/12*

U.S. Cl. 423—484 **2 Claims**



A continuous process and apparatus based on a technically advantageous straight through method of thermally decomposing fluosilicic acid into HF and water mixed with silicon tetrafluoride, whilst silicon hydroxide formed at the same time settles out, the liquids being heated further and passed in counter current with organic absorbent through a column, unabsorbed vapors being recycled for mixing with incoming fresh fluosilicic acid, the organic absorbent being chosen to have higher selective affinity for HF than for silicon tetrafluoride and water vapor and also showing advantageous properties for being solvent stripped subsequently of basically pure solvated HF whereas impurities, mainly some silicon tetrafluoride, are retained and recycled with the absorbent to the absorbing column.

3,773,908

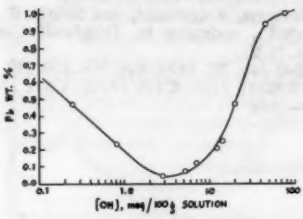
REMOVAL OF DISSOLVED LEAD FROM LITHIUM CHLORIDE SOLUTIONS

Ephraim A. Cuevas, Corpus Christi, Tex., and Wayne S. Johnston, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of application Ser. No. 54,407, July 13, 1970. This application Mar. 27, 1972, Ser. No. 238,215

Int. Cl. C01d *11/02*

U.S. Cl. 423—499 **17 Claims**



A process is described in which careful control of the hydroxyl ion concentration in a lithium chloride solution containing contaminating quantities of lead is utilized to provide for maximum precipitation of the dissolved lead compounds from the solution so controlled. A solubility curve developed for lead contained in lithium chloride solutions based upon the hydroxyl ion concentration of those solutions shows that the solubility of lead compounds in such solutions decreases as the milliequivalents of hydroxyl ions decreases to about 8. At milliequivalent concentrations of hydroxyl ions of from 8 to about 1.8, lead is relatively insoluble in lithium chloride solutions. As the hydroxyl ion milliequivalent drops below 1.8, the lead solubility again increases. Utilizing this discovery lithium chloride solutions containing lead compounds as contaminants are purified to provide lithium chloride solutions containing very low quantities of lead therein.

3,773,909

CHALCOGENIDE SPINEL POWDERS

Donald Pearlman, Edward Carnall, Jr., and Thomas W. Martin, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 20, 1971, Ser. No. 182,128

Int. Cl. C01b *17/20, 19/00*

U.S. Cl. 423—508 **21 Claims**

This invention relates to a process for preparing chalcogenide spinel powder wherein the chalcogen is selected from the group sulfur, selenium, tellurium or mixtures thereof. The process involves contacting certain finely divided inorganic mixtures with a chalcogen source at a relatively low temperature. In a preferred embodiment a cyclical process is described.

3,773,910

PREPARATION OF SOLID COMPOSITION OF MATTER CONTAINING LARGE PERCENTAGES OF SULFURIC ACID

Harold W. Wilson, El Paso, Tex., assignor to Wilson & Chandler

No Drawing. Filed Nov. 2, 1971, Ser. No. 195,004

Int. Cl. C01b *17/72, 17/90*

U.S. Cl. 423—530 **28 Claims**

Sulfuric acid can be converted into a solid form composition of matter containing large quantities of hydro-

lyzable and chemically uncombined sulfuric acid by a process in which the sulfuric acid is reacted with alkaline earth metal silicates to form alkaline earth metal bisulfate and metasilicic acid-sulfuric acid adsorbates. The sulfuric acid can be recovered from these solid form compositions by controlled heating at temperatures in the range of about 340–950° C.

3,773,911

PROCESS FOR PRODUCING SODIUM SULPHATE

Giorgio Cozza, Luigi Piccolo, and Gabriele Bottai, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Nov. 18, 1971, Ser. No. 200,223
Claims priority, application Italy, Nov. 26, 1970, 32,208–A/70
Int. Cl. C01d 5/00; C01g 49/00
U.S. Cl. 423—551 6 Claims

Sodium sulphate is produced from ferrous sulphate heptahydrate by reacting with sodium hydroxide in solution to give a sodium sulphate content of 22 to 28% in the presence of carbon dioxide.

3,773,912

ANTIPOLLUTION DISPOSAL OF SOUR REFINERY GAS WITH SULFUR RECOVERY

Carl David Spangler, Jr., 2400 Mockingbird Lane, Ponca City, Okla. 74601

No Drawing. Filed Dec. 10, 1970, Ser. No. 97,039
Int. Cl. C01b 17/02; C01c 3/00
U.S. Cl. 423—574 6 Claims

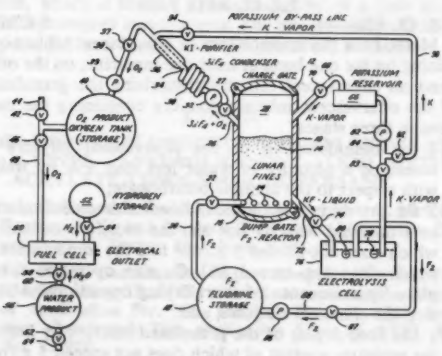
A gaseous stream comprising hydrogen sulfide and ammonia is passed over a catalyst comprising iron or both cobalt and molybdenum to convert the ammonia to hydrogen and nitrogen and then is passed to a Claus type sulfur recovery process wherein hydrogen sulfide is converted to sulfur. Optionally, the stream, subsequent to the dissociation of the ammonia, is passed to an amine absorber, and the hydrogen sulfide regenerated from the amine is then passed to a Claus type sulfur recovery process. Atmospheric pollution from sulfur compounds and nitrogen oxides is abated.

3,773,913

METHOD FOR OBTAINING OXYGEN FROM LUNAR OR SIMILAR SOIL

William R. Downs, Houston, Tex., assignor to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Feb. 28, 1972, Ser. No. 229,916
Int. Cl. C01b 13/00; C22b 21/00, 45/00
U.S. Cl. 423—579 4 Claims



Recovery of oxygen from soil containing metal oxides such as alumina, silica, calcia, magnesia, and ilmenite wherein the material containing the oxides is placed in a vessel and reacted with fluorine to provide oxygen and metal fluorides. The oxygen produced from this reaction is recovered and stored, after further purifying processes, and the metal fluorides are further reacted with potassium vapor to provide potassium fluoride and free metals. The potassium fluoride is then subjected to electrolysis whereby the potassium and fluorine are separated and are recycled for further use in the system. Valuable free metals are recovered for other uses.

3,773,914

CADMIUM STANNATE YELLOW PIGMENT AND METHOD OF PREPARATION

Arthur Jack Nozik, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 20, 1971, Ser. No. 181,915
Int. Cl. C01g 19/00
U.S. Cl. 423—593 5 Claims

Cd_2SnO_4 (cadmium stannate) has been found to provide a yellow pigment of high color intensity while exhibiting excellent light fastness and heat stability. This has been achieved by minimizing the oxygen vacancy concentration in macromolecular structure.

3,773,915

COMPOUND OF RHODIUM AND MOLYBDENUM AND METHOD OF MANUFACTURE

Louis Degueldre and Yves Gobillon, Brussels, Lucien Clerbois, Vilvoorde, and Louis Bourgeois, Brussels, Belgium, assignors to Solvay et Cie, Brussels, Belgium

No Drawing. Filed Jan. 3, 1972, Ser. No. 215,158
Claims priority, application Luxembourg, Jan. 13, 1971, 62,411
Int. Cl. C01g 39/00, 55/00
U.S. Cl. 423—593 2 Claims

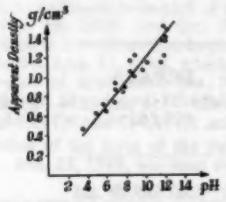
Manufacture of an oxidic compound of rhodium and molybdenum of empirical formula RH_2MoO_6 having semiconducting properties, suitable for coating electrodes for use in electrochemical processes.

3,773,916

PROCESS FOR THE MANUFACTURE OF ARTIFICIAL MANGANESE DIOXIDE

Eberhard Preisler, Hurth-Knapsack, Kurt Grapentin, Cologne-Zollstock, Heinz Harnisch, Lovenich, and Gerhard Mietens, Hurth-Efferen, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

Filed Jan. 26, 1972, Ser. No. 220,906
Claims priority, application Germany, Jan. 29, 1971, P 21 04 127.0
Int. Cl. C01g 45/02
U.S. Cl. 423—605 10 Claims



Relationship Between Apparent Density of Manganese Dioxide Precipitate and the pH Value.

Production of artificial manganese dioxide by intensively mixing together, in aqueous phase, manganese-(II) salts, hypochlorite and compounds producing an alkaline reaction, washing out precipitated manganese dioxide and drying it. More particularly, manganese dioxide with an

apparent density of more than 0.8 gram/cubic centimeter is produced by using the starting materials in the quantitative ratio necessary to establish and maintain a pH-value higher than 8, during and following the precipitation, the pH-value selected being the higher the higher the apparent density of the resulting final product shall be. The resulting product, which may be predried if desired, is washed with a non-reducing acid at a pH-value of less than 2 until free from alkali, wash acid is removed, and the manganese dioxide is dried at temperatures between 100 and 350° C.

3,773,917
RECOVERY OF USED SULFURIC ACID ALKYLATION CATALYST

Ralph M. Lewis, Weston, Conn., Charles T. Lewis, Jr., Groves, Tex., and Arthur R. Goldsby, Chappaqua, N.Y., assignors to Texaco Inc., New York, N.Y.

Continuation of abandoned application Ser. No. 837,551, June 30, 1971. This application Nov. 10, 1971, Ser. No. 197,546

Int. Cl. C01b *17/72*

U.S. Cl. 423—525 **3 Claims**

Improved method for recovering sulfuric acid from used sulfuric acid containing water and hydrocarbon whereby used alkylation acid is blended with spent acid of relatively high hydrocarbon content obtained by reacting used alkylation acid with an aliphatic olefin to form dialkyl sulfate which is extracted from the spent acid with isobutane. The blend of the two acids is burned in a sludge conversion process and the sulfur values recovered as strong sulfuric acid.

3,773,918
STABLE, REACTIVE ALUMINUM HYDROXIDE DRIED GEL AND METHOD OF MAKING SAME

Stewart M. Beekman, Signal Mountain, Tenn., assignor to Chattem Chemicals Division of Chattem Drug & Chemical Company, Chattanooga, Tenn.

No Drawing. Continuation-in-part of application Ser. No. 720,446, Apr. 11, 1968. This application Sept. 24, 1971, Ser. No. 183,636

Int. Cl. A61k *27/00*; **C01f** *7/02, 7/34*

U.S. Cl. 423—629 **6 Claims**

An improved, highly reactive aluminum hydrogel particularly suitable for use in antacid compositions and characterized by stability and retained reactivity upon prolonged periods of storage. The hydrogel is produced by reacting aluminum chloride with a solution containing alkali metal carbonate ions at a temperature of 0 to 5° C., resulting in the production of a hydrogel containing from 0.5 to 3% by weight aluminum oxide (Al_2O_3). The resulting hydrogel is rapidly dried to produce a gel having enhanced stability upon standing, and improved reactivity.

ERRATA

For Classes 423—351 and 423—387 see:
Patents Nos. 3,773,947 and 3,773,948

3,773,919
POLYLACTIDE-DRUG MIXTURES

George Albert Boswell and Richard M. Scribner, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 868,899, Oct. 23, 1969. This application Oct. 8, 1970, Ser. No. 79,309

Int. Cl. A61k *27/12*

U.S. Cl. 424—19 **16 Claims**

Described and claimed are formulations of polylactide and drug to be introduced into the body which provide a slow sustained release of the drug over a controlled period of time. The polylactide is biodegradable in the body into normal or essentially normal metabolic products that have no deleterious or untoward effect on the body.

3,773,920
SUSTAINED RELEASE MEDICINAL COMPOSITION

Atsushi Nakamoto, Kawasaki, Keizaburo Ogawa, Kawagoe, and Tadashi Ukigaya, Tokyo, Japan, assignors to Nikken Chemical Co., Ltd., Tokyo, Japan

No Drawing. Filed July 14, 1971, Ser. No. 162,657

The portion of the term of the patent subsequent to Dec. 21, 1988, has been disclaimed

Int. Cl. A61k *27/12*

U.S. Cl. 424—19 **9 Claims**

A sustained release medicinal composition is formed from (1) 100 parts of by weight granules containing a medicament, a metal salt of a higher fatty acid and a binder, (2) 50–200 parts by weight of ethyl cellulose and (3) 30–120 parts by weight of a water soluble polymer.

3,773,921
THERAPEUTIC COMPOSITIONS

Prabhakar Ranchhordas Sheth, Nanuet, N.Y., and Donald Melvin Stiel, Pine Brook, N.J., assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

No Drawing. Filed Nov. 15, 1971, Ser. No. 199,004

Int. Cl. A61k *27/12*

U.S. Cl. 424—19 **6 Claims**

A therapeutic composition having sustained release properties and its use in veterinary medicine is described. The composition comprises a mixture of (1) a therapeutically active sulfa drug, (2) dibasic calcium phosphate, (3) a binder and (4) a lubricant.

The composition is formulated, by conventional methods, into solid dosage forms for oral administration. When administered to ruminants, e.g., cattle and sheep, the product deposits itself in the rumen where the active ingredient is released slowly and continuously and absorbed, in like manner, into the blood stream.

3,773,922
METHOD FOR THE MANUFACTURE OF EFFERVESCENT TABLETS

Gerhard Gergely, Vienna, Austria, assignor to Societe Francaise de Developpement et de Recherche Sofrader, Paris, France

Filed Apr. 6, 1972, Ser. No. 241,772

Claims priority, application France, Apr. 6, 1971, 12,175; Sept. 29, 1971, 7135069

Int. Cl. A61k *9/00*

U.S. Cl. 424—44 **8 Claims**

Method for the manufacture of effervescent tablets containing on the one hand at least one medicine, on the other hand an effervescent mixture comprising the granulation of the effervescent mixture possibly containing the medicine in three stages:

(1) the humidification of the effervescent mixture by means of a quantity of water less than 1% by weight with respect to the alkaline bicarbonate;

(2) the pre-drying of the humidified effervescent mixture in a fluidized bed, by hot air, the moisture content of which does not exceed 5 g./m.^{3} and the temperature of which does not exceed 60° C., this operation taking place by a sequence of short drying operations so as to stop the chemical reaction; and

(3) the final drying of the granulated mixture by hot air, the moisture content of which does not exceed 5 g./m.^{3}, and the temperature of which does not exceed 60° C., in a fluidized bed, until the residual content of water in the granules is less than 0.25% by weight and, preferably comprised between 0.05 and 0.15%.

3,773,923

PREVENTING HERPES VIRUS INFECTIONS WITH COPOLYMERS OF DIVINYL ETHER AND MALEIC ANHYDRIDE

William Regelson, Richmond, Va., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application July 10, 1970, Ser. No. 54,022, which is a continuation-in-part of application Ser. No. 716,257, Mar. 6, 1968, which in turn is a continuation-in-part of application Ser. No. 577,675, Sept. 7, 1966, all now abandoned. Divided and this application Jan. 14, 1972, Ser. No. 218,025

Int. Cl. A61k *27/00*

U.S. Cl. 424—78 2 Claims

Certain water-soluble copolymers prepared from divinyl ether and maleic anhydride have been found to suppress virus growth. Administration of said copolymers not only suppresses growth in infected animals but also increases resistance to virus infection in healthy animals by stimulating the production of interferon.

3,773,924

INTERFERON PRODUCTION

Monto Ho, 396 Midway Road 15216; John Allan Armstrong, 6607A Ridgeville St. 15217; and Yang-Hsien Ke and Yin-Hwee Tan, both of 2369 Tilbury Ave. 15217, all of Pittsburgh, Pa.

No Drawing. Filed Dec. 24, 1970, Ser. No. 101,390

Int. Cl. A61k *27/00*

U.S. Cl. 424—85 6 Claims

The yield of interferon is increased when cells are stimulated to produce interferon by sequential addition of metabolic inhibitors such as cycloheximide and actinomycin D.

3,773,925

PARTRICIN

Tiberio Bruzzese and Rodulfo Ferrari, Milan, Italy, assignors to SPA-Societá Prodotti Antibiotici S.p.A., Milan, Italy

Filed Nov. 3, 1971, Ser. No. 195,368

Claims priority, application Great Britain, Nov. 3, 1970, 52,270/70

Int. Cl. A61k *21/00*

U.S. Cl. 424—122 7 Claims

The present invention provides a new antibiotic, partricin, which is formed by the culturing of a new strain of *Streptomyces aureofaciens*. The new antibiotic exhibits a powerful anti-fungal and anti-protozoal activity.

3,773,926

OIL DISPERSIBLE PESTICIDES EMPLOYING AN N-VINYL - 2-PYRROLIDINONE-ALKYL METHACRYLATE COPOLYMER DISPERSANT

Edwin C. Knowles, Poughkeepsie, and Frederic C. McCoy, Beacon, N.Y., and Richard D. Watson, Naperville, Ill., assignors to Texaco Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 751,747, Aug. 12, 1968, which is a continuation-in-part of application Ser. No. 158,112, Dec. 8, 1961, both now abandoned. This application Sept. 16, 1970, Ser. No. 72,900

Int. Cl. A01n *9/00, 9/02, 13/00*

U.S. Cl. 424—78 15 Claims

Composition and method for the treatment of plants wherein a hydrocarbon insoluble pesticidal material is dispersed in a hydrocarbon mineral oil fraction by a N-vinyl-2-pyrrolidinone-C_4–C_{18}-alkyl methacrylate copolymer.

3,773,927

PREPARATION OF AN AQUEOUS SLURRY OF AMMONIUM CHLORIDE AND METHYLMERCAPTO-HYDROXYBUTYRIC ACID

Earl W. Cummins, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 20, 1971, Ser. No. 210,199

Int. Cl. A23k *1/00;* A61k *27/00*

U.S. Cl. 424—166 9 Claims

A process for preparing high strength aqueous solutions of γ-methylmercapto-α-hydroxybutyric acid (MHBA) by hydrolyzing γ-methylmercapto - α - hydroxybutyronitrile (MHBN) with HCl under controlled conditions.

3,773,928

TREATMENT OF VIRUS-INDUCED DISEASES WITH ORGOTEIN

Wolfgang Huber, San Francisco, and Thomas L. Schulte, Woodside, Calif., assignors to Diagnostic Data, Inc., Mountain View, Calif.

No Drawing. Continuation-in-part of application Ser. No. 3,517, Jan. 16, 1970, which is a continuation-in-part of application Ser. No. 576,454, Aug. 31, 1966, which in turn is a continuation-in-part of application Ser. No. 494,048, Oct. 8, 1965, all now abandoned. This application May 10, 1972, Ser. No. 252,094

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 18 Claims

A method of symptomatically treating a viral-induced disease in an animal which is suffering from the results of the viral infection, which comprises the systemic administration to the infected patient of successive therapeutically effective doses of orgotein. Viruses causing such orgotein-responsive reaction include adenovirus, herpesvirus, myxovirus, paramyxovirus, poxvirus, reovirus, picornavirus and arbovirus.

3,773,929

PHARMACEUTICAL COMPOSITIONS COMPRISING ORGOTEIN AND THEIR USE

Wolfgang Huber, San Francisco, and Thomas L. Schulte, Woodside, Calif., assignors to Diagnostic Data, Inc., Mountain View, Calif.

No Drawing. Application Ser. No. 237,507, Mar. 23, 1973, which is a continuation-in-part of applications Ser. No. 3,538, Jan. 16, 1970, and Ser. No. 15,883, Mar. 2, 1970, which is a continuation-in-part of application Ser. No. 576,454, Aug. 31, 1966, which in turn is a continuation-in-part of application Ser. No. 494,048, Oct. 8, 1965, all now abandoned. Divided and this application Nov. 2, 1972, Ser. No. 303,059

The portion of the term of the patent subsequent to Jan. 25, 1989, has been disclaimed

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 15 Claims

Pharmaceutical compositions comprising, in a pharmaceutically acceptable carrier, an effective unit dosage amount of orgotein, the non-proprietary name assigned to members of a family of globular, soluble metalloprotein congeners whose compact conformation is maintained by chelated divalent metals, usually about 2 GAPM each of Cu and Zn, in isolated, substantially pure or pure form, some of which metalloproteins, in various states of purity, have been named erythrocuprein, hepatocuprein,

cerebrocuprein, cytocuprein and superoxide dismutase, are useful in the treatment of inflammatory, shock and toxic conditions.

3,773,930

AMINO ACID COMPOSITION

Kasheed Mohammed, East Brunswick, and Jeremy Blake, Kendall Park, N.J., assignors to Johnson & Johnson

No Drawing. Filed Mar. 23, 1971, Ser. No. 127,388
Int. Cl. A61k *15/00, 27/00*
U.S. Cl. 424—180 9 Claims

A low residue, dietary composition for supplying nitrogen nutritional requirements is provided comprising at least one amino acid and a quantity of non-amino acid derived caloric material sufficient to obviate the diarrhea problem associated with prior amino acid compositions. The obnoxious taste of the amino acids is masked by including flavoring material in quantities substantially lower than that required to render prior amino acid containing diets palatable, thereby obviating diarrhea problems caused by large quantities of flavoring materials and reducing the cost of the product. The small quantities of flavoring material are made effective in rendering the composition of this invention palatable by the inclusion of pectin, the pectin acting to enhance the masking effect of the flavoring material.

3,773,931

PHARMACOLOGICALLY EFFECTIVE SUBSTANCE ISOLATED FROM *CABUCALA MADAGASCARIENSIS*

Alfred Groebel, Bad Soden, Taunus, and Ernst Lindner, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Feb. 22, 1972, Ser. No. 227,919
Claims priority, application Germany, Feb. 22, 1971, P 21 08 366.9
Int. Cl. A61k *27/00*
U.S. Cl. 424—195 3 Claims

A pharmacologically active substance and physiologically tolerable salts thereof having hypotensive properties. Said agent, which is isolated from *Cabucala madagascariensis*, melts at 87° C., corresponds to the molecular formula $C_{28}H_{56}O_{12}N_3Cl$, has a molecular weight between 780 and 800 as determined by mass spectroscopy, shows no absorption in its ultraviolet spectrum between 210 and 40 mμ, and has a specific rotation $[\alpha]_{20}^{D}$ in water of −20°.

Method of isolating said substance from *Cabucala madagascariensis.*

3,773,932

METHOD FOR RECOVERING SILYMARIN COMPRISING POLYHYDROXYPHENYL CHROMANONES

Rolf Madaus, Cologne-Merheim, Germany, assignor to Dr. Madaus & Co., Cologne, Germany

No Drawing. Filed May 27, 1969, Ser. No. 828,353
Claims priority, application Germany, June 1, 1968, P 17 67 666.3; May 6, 1969, P 19 23 082.1
Int. Cl. A61k *27/14*
U.S. Cl. 424—195 7 Claims

Silymarin comprising polyhydroxyphenyl chromanones is recovered from the dried fruit of *Silybum marianum* Gaertn. by separating the fatty oils therefrom, extracting the remaining solid residue with ethyl acetate, evaporating the ethyl acetate and dissolving the dry residue in a solvent mixture comprising methanol, water and petroleum ether to form a two-phase system wherein the chromanones are contained in the lower phase, recovering the polyhydroxyphenyl chromanones from the lower phase after subjecting same to multiple countercurrent contact with petroleum ether.

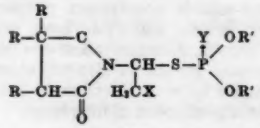
3,773,933

O,O-DIALKYL S-[2-HALO - 1 - (N-SUCCINIMIDO) ETHYL] PHOSPHOROTHIOATES AND PHOSPHORODITHIOATES USED AS INSECTICIDES

Joel D. Jamison, New Castle, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Application June 19, 1969, Ser. No. 835,909, now Patent No. 3,654,307, which is a continuation-in-part of abandoned application Ser. No. 603,747, Dec. 22, 1966. Divided and this application Sept. 22, 1971, Ser. No. 182,826
Int. Cl. A01n *9/36*
U.S. Cl. 424—200 4 Claims

Disclosed are O,O-dialkyl S-[2-halo-1-(N-succinimido) ethyl] phosphorothioates and phosphorodithioates of the structural formula:



wherein each R is selected from the group consisting of the hydrogen and R′ radicals with the maximum number of R radicals that can be R′ radicals being two, X is a halo radical, Y is selected from the group consisting of the oxo and thioxo radicals, and each R′ is a C_1–C_7 alkyl radical. These compounds are useful as insecticides.

3,773,934

FUNGICIDAL COMPOSITIONS CONTAINING 3-ARYLIMINO - 4 - CHLORO - 5 - AMINO-1,2-DITHIOLS

Jorg Bader, Arlesheim, and Karl Gatzi, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application May 28, 1969, Ser. No. 828,779, now Patent No. 3,629,252. Divided and this application Aug. 5, 1971, Ser. No. 169,541
Int. Cl. A01n *9/12, 9/22*
U.S. Cl. 424—248 2 Claims

3-arylimino-4-chloro-5-amino-1,2-dithiols are disclosed as antifungal and bactericidal agents. They are particularly useful for the protection of plants against phytopathogenic fungi. Antifungal compositions containing them as active ingredients are also described.

3,773,935

4-AZOSULFONAMIDES AS ANTHELMINTICS FOR TREATING LIVER FLUKE

Helmut H. Mrozik, Matawan, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Apr. 19, 1971, Ser. No. 135,507
Int. Cl. A61k *27/00*
U.S. Cl. 424—226 8 Claims

4-(heterocyclicazo)-benzenesulfonamides are employed in the treatment of both mature and immature liver fluke infections. They are preferably orally administered to host animals in suitable compositions, although parenteral administration is also suitable.

3,773,936

METHOD OF TREATING INFLAMMATION WITH SUBSTITUTED ANILINO SALICYLIC ACIDS

Tsung-Ying Shen, Gordon L. Walford, and Bruce E. Witzel, Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed June 25, 1969, Ser. No. 836,631
Int. Cl. A61k *27/00*
U.S. Cl. 424—230 5 Claims

New substituted anilino carboxylic acids and nontoxic pharmaceutically acceptable salts, esters, amides, and various derivatives thereof are claimed. The substituted anilino carboxylic acids described herein have

anti-inflammatory, anti-pyretic, and analgesic activity. Also included is a method of preparing said anilino carboxylic acids and method of treatment using certain of these substituted anilino carboxylic acids.

3,773,937

METHOD OF TREATMENT

Margaret E. Greig, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed May 15, 1972, Ser. No. 252,973

Int. Cl. A61k *17/00*

U.S. Cl. 424—243 7 Claims

Use of 17-acylates of melengestrol, said acylates having from two to about ten carbon atoms, inclusive, for treating multiple sclerosis.

3,773,938

1-PHENYL-6-AZACYTOSINES AS COCCIDIOSTATS

Max W. Miller, Stonington, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Original application Feb. 19, 1971, Ser. No. 117,055, now Patent No. 3,715,356. Divided and this application Oct. 11, 1972, Ser. No. 300,561

Int. Cl. A61k *27/00*

U.S. Cl. 424—249 2 Claims

Substituted 1-phenyl-6-azacytosines are effective in the control and treatment of coccidiosis.

3,773,939

N-ARALLYL-N'-ARALKYL PIPERAZINE PHARMACEUTICAL COMPOSITIONS

Paul Adriaan Jan Janssen, Vosselaar, Belgium, assignor to Janssen Pharmaceutica, N.V., Beerse, Belgium

Continuation-in-part of abandoned application Ser. No. 741,999, July 2, 1968. This application Nov. 24, 1971, Ser. No. 201,893

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 11 Claims

Pharmaceutical compositions of N-arallyl-N'-aralkylpiperazines having anti-arrhythmic and vasoconstriction inhibiting activities.

3,773,940

1,2,3,8 - TETRAHYDRODIBENZO[3,4:6,7]CYCLOHEPTA[1,2-c]PYRROLES AS CNS-DEPRESSANTS

Walter Schindler, deceased, late of Riehen, Basel, Switzerland, by Jacques Gosteli and Leonhard Gysin, executors, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application May 19, 1971, Ser. No. 145,010, now Patent No. 3,726,897, dated Apr. 10, 1973. Divided and this application Aug. 23, 1972, Ser. No. 283,010

Claims priority, application Switzerland, May 25, 1970, 7,672/70

Int: Cl. A61k *27/00*

U.S. Cl. 424—274 4 Claims

Compounds of the class of 1,2,3,8-tetrahydrodibenzo [3,4:6,7]cyclohepta[1,2-c]pyrrole which may be substituted in the 2-position by an alkyl group and/or in the 5-position by chlorine or the methyl or the methoxy group respectively and pharmaceutically acceptable acid addition salts thereof have a depressant effect on the central nervous system; they can be prepared from the corresponding 10,11 - bisbromomethyl-5H-dibenzo[a,d] cycloheptenes and a primary amine; the compounds are active ingredients of pharmaceutical compositions.

3,773,941

INSECTICIDAL COMPOSITIONS COMPRISING 1,4-DITHIACYCLOHEPTYLIDEN - 6 - IMINYL CARBAMATES AND METHODS OF USING THE SAME

Ranajit Ghosh, Nigel Douglas Bishop, and Frederick Charles Peacock, Bracknell, England, assignors to Imperial Chemical Industries Limited, London, England

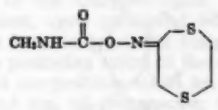
No Drawing. Original application Dec. 2, 1968, Ser. No. 780,590, now Patent No. 3,661,930, dated May 9, 1972. Divided and this application Oct. 19, 1970, Ser. No. 82,207

Claims priority, application Great Britain, Dec. 4, 1967, 55,062/67

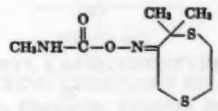
Int. Cl. A01n *9/12*

U.S. Cl. 424—277 6 Claims

Insecticidal compositions and methods of using the same wherein the active ingredient is a carbamoyl oxime such as



and



3,773,942

CARBAMOYLOXIMINO ALKENYL-DITHIOLONES USED AS INSECTICIDES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Feb. 24, 1970, Ser. No. 13,765, now Patent No. 3,678,075. Divided and this application May 11, 1972, Ser. No. 252,501

Claims priority, application Switzerland, Feb. 27, 1969, 2,966/69; Mar. 11, 1969, 3,635/69

Int. Cl. A01n *9/12*

U.S. Cl. 424—277 4 Claims

A group of 2-carbamoyloximino-4-alkenyl-1,3-dithiolanes is disclosed, which are effective insecticidal compounds particularly for controlling soil insects.

3,773,943

ALPHA,ALPHA,ALPHA-TRIFLUORO - 6 - SUBSTITUTED - 5 - NITRO-m-TOLUIC ACID, 5'-NITROFURYLIDENE HYDRAZIDE COMPOUNDS AS GROWTH PROMOTANTS

Dean E. Welch, Harry S. Nakaue, and Robert D. Vatne, Charles City, Iowa, assignors to Salsbury Laboratories

No Drawing. Original application June 17, 1969, Ser. No. 841,182, now Patent No. 3,642,784. Divided and this application Apr. 8, 1971, Ser. No. 132,370

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 10 Claims

The compounds of this invention are alpha,alpha,alpha-trifluoro-6-substituted-5-nitro-m-toluic acid, 5'-nitrofurfurylidene hydrazides. These compounds possess useful animal growth-promoting properties and are useful in the control and treatment of blackhead in poultry.

3,773,944

METHOD OF TREATING HYPERCHLORHYDRIA AND/OR ASSOCIATED CONDITIONS

Wilbur Lippmann, Montreal, Quebec, Canada, assignor to Ayerst, McKenna and Harrison, Limited, Ville St. Laurent, Quebec, Canada

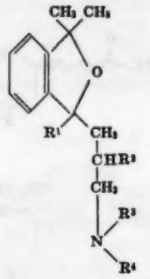
No Drawing. Continuation-in-part of application Ser. No. 826,657, May 21, 1969, now Patent No. 3,629,445, and a division of application Ser. No. 866,396, Oct. 14, 1969, now Patent No. 3,670,088. This application Nov. 22, 1971, Ser. No. 201,171

The portion of the term of the patent subsequent to Dec. 21, 1988, has been disclaimed

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 5 Claims

A method for preventing the secretion of excessive amounts of hydrochloric acid in the stomach of humans suffering from hyperchlorhydria and/or associated conditions, by administering an effective amount of a compound of the formula



wherein R^1 represents the phenyl or the cyano group, and R^2, R^3 and R^4 represent hydrogen or methyl.

3,773,945

PROCESS FOR CONTROLLING FUNGI

Asbjorn Baklien, Kingsbury, and Jocelyn Margaret Gregory, Croydon, Victoria, Australia, assignors to Imperial Chemical Industries of Australia and New Zealand Limited, Melbourne, Victoria, Australia

No Drawing. Filed Sept. 6, 1968, Ser. No. 758,132

Claims priority, application Australia, Sept. 11, 1967, 27,040/67

Int. Cl. A01n *9/12*

U.S. Cl. 424—301 1 Claim

The growth of undesirable fungi is controlled by treating the same with thiol esters.

3,773,946

TRIGLYCERIDE-LOWERING COMPOSITIONS AND METHODS

Paul L. Creger, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 854,756, Sept. 2, 1969. This application Oct. 27, 1971, Ser. No. 193,170

Int. Cl. A61k *27/00*

U.S. Cl. 424—318 6 Claims

Pharmaceutical compositions comprising a pharmaceutical carrier and an α,α,α',α'-tetramethylalkanedioic acid having a total of 14 to 18 carbon atoms, or a salt or alkyl ester of such an alkanedioic acid. Methods for the lowering of serum triglyceride levels by administering an α,α,α',α'-tetramethylalkanedioic acid having a total of 14 to 18 carbon atoms, or a salt or alkyl ester of such an alkanedioic acid.

3,773,947

PROCESS OF GENERATING NITROGEN USING METAL AZIDE

Carl Boyars and Carl T. Zovko, Silver Spring, Md., assignors to the United States of America, as represented by the Secretary of the Navy

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,512

Int. Cl. C01b *21/00*

U.S. Cl. 423—351 12 Claims

A method of generating hot nitrogen gas comprising contacting SF_6 or N_2O with sodium azide or an azide of similar sensitivity in the presence of a conventional propellant initiator.

3,773,948

AMMINE COMPLEX OF PALLADIUM NITRATE AND METHOD OF PREPARATION

James H. Tsai, Sarnia, Ontario, Canada, and Ludo K. Frevel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 26, 1970, Ser. No. 67,227

Int. Cl. C01b *21/00;* C01g *55/00*

U.S. Cl. 423—387 9 Claims

An ammine complex of palladium nitrate is prepared by dissolving palladium in nitric acid and neutralizing with ammonia until an orange color in the solution is formed. The novel complex has the structure

$$[Pd(NH_3)_3NO_2]_2[Pd(NH_3)_4](NO_3)_4$$

It can be used to prepare a highly reactive palladium-containing catalyst or to prepare $Pd(NH_3)_4(NO_3)_2$ which is useful as a palladium plating compound.

3,773,949

CERTAIN s-TRIAZOLO[1,5-a]PYRIMIDINES FOR PREVENTING BRONCHOSPASM OR REDUCING BODY FAT

Michael Dukes Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Original application Aug. 14, 1969, Ser. No. 850,221, now Patent No. 3,689,488, dated Sept. 5, 1972. Divided and this application May 12, 1972, Ser. No. 252,727

Int. Cl. A61k *27/00*

U.S. Cl. 424—251 3 Claims

A series of novel 5-(or 7-) oxo or thioxo dihydro-s-triazolo[1,5-a]pyrimidine derivatives bearing an amino, substituted amino or carboxy derivative in the 2-position, an alkyl or alkenyl substituent in the 4-position and, optionally a halogen or alkyl substituent in the 6-position. These compounds prevent bronchospasm and are therefore useful in the treatment of asthma.

3,773,950

USE OF 2,3-DIHYDRO-1-OXO-1H-PYRROLO[3,4-b]-QUINOXALINE - 4,9 - DIOXIDES AS ANIMAL GROWTH PROMOTANTS

Timothy Henry Cronin, Niantic, and Philip Dietrich Hammen, East Lyme, Conn., Elie Abusanab, Peace Dale, R.I., and Marwan Jawdat Abu el-haj, Groton, Conn., assignors to Pfizer Inc., New York, N.Y.

No Drawing. Original application Apr. 3, 1970, Ser. No. 25,543. Divided and this application Mar. 17, 1972, Ser. No. 235,791

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 8 Claims

3-halomethyl-2-quinoxalinecarboxylic acid, alkyl ester 1,4-dioxides useful as antibacterial agents are converted, on treatment with ammonia and amines to 2,3-dihydro-1-oxo-1H-pyrrolo[3,4-b]quinoxaline-4,9-dioxides also useful as chemotherapeutic agents and in promoting growth and improving feed efficiency of animals, in general.

3,773,951

METHOD OF TREATING DEPRESSION WITH 1-(2-PYRIDYL)PIPERAZINE

Rodolfo Rodriguez, Mexico City, Mexico, assignor to Miles Laboratories, Inc., Elkhart, Ind.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,133
Int. Cl. A61k 27/00
U.S. Cl. 424—250 2 Claims

Administration of 1-(2-pyridyl)piperazine or a pharmaceutically acceptable acid addition salt thereof is disclosed as a chemotherapeutic method of treating manifestations of depression in experimental mammals. Daily doses ranging from 2 mg./kg. to 60 mg./kg. per day are considered effective.

3,773,952

ALLOXAN-5-THIOSEMICARBAZONE AS AN ANTIBACTERIAL AGENT

John D. Douros, Jr., Littleton, Milan Brokl, Denver, and Al F. Kerst, Littleton, Colo., assignors to The Gates Rubber Company, Denver, Colo.

No Drawing. Filed July 6, 1971, Ser. No. 160,143
Int. Cl. A01n 9/00, 9/22
U.S. Cl. 424—251 14 Claims

Alloxan-5-thiosemicarbazone can be used to inhibit and/or prevent the growth of undesirable bacteria, fungi and foliage. This invention is particularly concerned with the bacteriostatic and bactericidal properties of alloxan-5-thiosemicarbazone against species of Erwinia, Staphylococcus, and Salmonella.

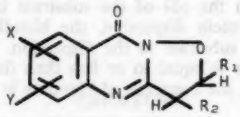
3,773,953

METHODS FOR RELIEVING PAIN

David B. Reisner, Highstown, Bernard J. Ludwig, North Brunswick, Frank M. Berger, Princeton, and Robert D. Sofia, Willingboro, N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 79,311, Oct. 8, 1970, now Patent No. 3,681,350, dated Aug. 1, 1972. This application July 21, 1972, Ser. No. 273,923
Int. Cl. A61k 27/00
U.S. Cl. 424—251 4 Claims

Chemical compounds of the formula:



in which X and Y, which may be the same or different, each represent a member selected from the group consisting of hydrogen, hydroxy, halogen, lower alkyl, lower alkoxy or sulfonamido and R_1 and R_2, which may be the same or different, represent hydrogen or lower alkyl. Said compounds have demonstrated valuable analgesic properties in standard laboratory animals.

3,773,954

HYDROXYPHENYL - 2 - DECAHYDROQUINOLYL-CARBINOLS IN PRODUCING β-ADRENERGIC STIMULANT ACTIVITY

Carl Kaiser, Haddon Heights, N.J., assignor to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original application Nov. 23, 1970, Ser. No. 92,161, now Patent No. 3,691,172. Divided and this application Apr. 10, 1972, Ser. No. 242,865
Int. Cl. A61k 27/00
U.S. Cl. 424—258 2 Claims

Hydroxyphenyl - 2 - decahydroquinolylcarbinols prepared by the condensation of an appropriately substituted ether derivative of a hydroxybenzaldehyde with 2-quinolyl lithium followed by removal of the ether group/s and reduction have β-adrenergic stimulant activity. Erythro and threo diastereo-isomers may be conveniently separated.

3,773,955

ANALGETIC COMPOSITIONS

Irwin Jacob Pachter, Woodbury, N.Y., and Maxwell Gordon, Philadelphia, Pa., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Aug. 3, 1970, Ser. No. 60,621
Int. Cl. A61k 27/00
U.S. Cl. 424—260 3 Claims

A new and novel orally effective, analgetic composition has been found which, upon parenteral administration, does not produce analgesia, euphoria or physical dependence, said composition comprising an orally inactive dose of naloxone and an orally active, strong analgetic in oral dosage form and containing for each analgetic dose of the analgetic agent an amount of naloxone sufficient, upon parenteral administration of said oral dosage form, to negate the analgetic, euphoretic and dependence producing action of the composition.

Two preferred compositions would be: (1) 1.0 mg. of naloxone and 2.5 mg. of phenazocine; (2) 1.0 mg. of naloxone and 5 mg. of methadone.

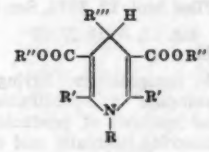
3,773,956

AZIDO-ARYL 1,4-DIHYDROPYRIDINES IN EFFECTING CORONARY DILATION

Dietrich Rucker, Bietigheim, Friedrich Bossert and Horst Meyer, Wuppertal-Elberfeld, and Wulf Vater, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Mar. 17, 1971, Ser. No. 125,427, now Patent No. 3,708,489. Divided and this application June 2, 1972, Ser. No. 259,289
Claims priority, application Germany, Mar. 20, 1970, P 20 13 431.0
Int. Cl. A61k 27/00
U.S. Cl. 424—266 36 Claims

Azido-aryl 1,4-dihydropyridines of the formula:



wherein

R is hydrogen, straight, branched or cyclic lower alkyl, lower alkenyl or lower alkinyl, unsubstituted or substituted by hydroxyl or alkoxy of 1 to 3 carbon atoms; or benzyl, or phenethyl, unsubstituted or substituted in the aryl portion by 1 to 3 members selected from the group consisting of 1 to 3 alkoxy moieties of 1 to 3 carbon atoms, 1 or 2 alkyl moieties of 1 to 3 carbon atoms, and 1 or 2 halogen atoms;

R' is straight or branched chain alkyl of 1 to 4 carbon atoms;

R'' is straight, branched or cyclic lower alkyl, lower alkenyl or lower alkinyl, straight, branched or cyclic lower alkyl, lower alkenyl or lower alkinyl, the carbon atom chain or ring of which is interrupted by 1 or 2 oxygen atoms or straight, branched or cyclic lower alkyl, lower alkenyl or lower alkinyl substituted by hydroxy or substituted by hydroxyl and the carbon

atom chain or ring of which is interrupted by 1 or 2 oxygen atoms; and

R''' is aryl substituted by an azido moiety and further unsubstituted or substituted by 1 or 2 members selected from the group consisting of 1 or 2 alkyl moieties of 1 to 4 carbon atoms, 1 or 2 fluoroalkyl moieties of 1 to 4 carbon atoms, 1 or 2 alkoxy moieties of 1 to 4 carbon atoms and 1 or 2 halogen atoms,

are useful for their coronary dilating effect, their nitrite-like effect on the heart, their anti-fibrillation effect, their vascular-spasmolytic effect and muscular-spasmolytic effect, and as anti-hypertensives.

3,773,957

ACETOPHENONE ANORECTIC METHOD

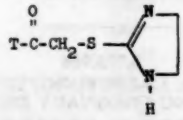
Abdulmuniem H. Abdallah, Zionsville, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Mar. 1, 1971, Ser. No. 119,825

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 6 Claims

There is disclosed herein a method useful for suppression of appetite and reduction of food intake in animals by means of administering to animals an anorectic amount of a compound corresponding to the formula:



wherein T represents 3-trifluoromethylphenyl, 4-fluorophenyl, 3,4-dichlorophenyl or 3,4-difluorophenyl, or a pharmaceutically-acceptable salt thereof.

3,773,958

METHODS OF PRODUCING ANTI-ARTHRITIC ACTIVITY USING 3-SUBSTITUTED-THIO-2,4-THIAZOLIDINEDIONE

Charles E. Berkoff, Huntingdon Valley, Blaine M. Sutton, Hatboro, and Donald T. Walz, Drexel Hill, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Filed Sept. 17, 1971, Ser. No. 181,573

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 4 Claims

Pharmaceutical compositions having anti-arthritic activity which comprise a 3-substituted-2-thio-2,4-thiazolidinedione and methods of producing anti-arthritic activity by administering internally said compositions.

3,773,959

FUNGICIDAL COMPOSITIONS COMPRISING GRISEOFULVIN AND THIABENDAZOLE AND METHODS OF UTILIZING SAME

Nardo Zaias, Miami, Fla., assignor to Research Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 170,391, Aug. 9, 1971. This application Aug. 30, 1972, Ser. No. 284,805

Int. Cl. A61k *27/00*

U.S. Cl. 424—270 2 Claims

It has been found that griseofulvin and thiabendazole, in combination, have a fungicidal effect upon certain dermatophytic fungi and deep mycosis fungi, in particular Trichophyton sp., Microsporum sp., and Epidermophyton sp., *Paracoccidioides brasiliensis*, and *Histoplasma capsulatum*. This effect substantially exceeds that of either component or that to be expected by the combination.

3,773,960

ACARACIDAL COMPOSITIONS AND METHODS COMPRISING ALIPHATICALLY SUBSTITUTED THIOSULFINYL- AND SULFONYL-ALKYL-2,4,5-TRIHALOGENO IMIDAZOLES

Hans Rutz, Basel, and Kurt Gubler, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Apr. 24, 1968, Ser. No. 723,904, now Patent No. 3,625,955. Divided and this application Apr. 5, 1971, Ser. No. 131,447

Claims priority, application Switzerland, Apr. 26, 1967, 5,960/67

Int. Cl. A01n *9/22*

U.S. Cl. 424—273 8 Claims

2,4,5-trihalogeno-imidazoles substituted in 1- position at the imidazole nucleus by a group of the formula R—S—A—, R—SO—A— or R—SO_2—A— in which group R represents an optionally substituted aliphatic hydrocarbon radical and A represents an alkylene group, are described, which imidazoles are acaricidally active and at the same time well tolerated by cultivated plants; they are thus useful for the control of acarinae, and especially of spider mites, on cultivated plants and trees. Acaricidal compositions containing such novel imidazoles as active ingredients, and a method of controlling acarinae with the aid of such compounds are also disclosed.

3,773,961

METHOD FOR PRODUCING PROTEIN CONTAINING BEVERAGE

Arthur L. Gordon, Des Plaines, Ill., assignor to Kraftco Corporation, Glenview, Ill.

No Drawing. Filed Jan. 18, 1971, Ser. No. 107,543

Int. Cl. A23l *1/00*

U.S. Cl. 99—28 10 Claims

A stable, acidic, aqueous, protein containing beverage is formed by blending a protein dispersion having an adjusted pH of from about 2.0 to less than 3.5 with an aqueous flavored substrate having a pH of less than about 6. When the pH of the substrate is greater than that of the protein dispersion, the blending is effected by adding the substrate to the dispersion. When the pH of the substrate is equal to or less than that of the protein dispersion, the sequence of blending is immaterial.

3,773,962

METHOD OF PREPARING COOKED AND FROZEN LOBSTER PRODUCTS

Richard D. Trelease, Downers Grove, and Sidney Malinow and John Baranauskas, Oak Lawn, Ill., assignors to Swift & Company, Chicago, Ill.

Filed Oct. 1, 1971, Ser. No. 185,636

Int. Cl. A23l *1/33*

U.S. Cl. 426—479 9 Claims

A frozen and cooked whole lobster product having a long shelf life, prepared by eviscerating a whole lobster and then carrying out a novel two-step cooking sequence which results in a whole, cooked lobster which may be kept frozen over an extended period of time without loss of flavor, texture and color.

ERRATA

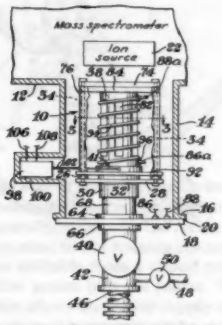
For Classes 426—151 thru 426—106 see:
Patents Nos. 3,773,518 thru 3,773,527

3,773,963

FURNACE ASSEMBLY FOR THERMAL ANALYSIS USE

Thomas P. Brady, Nattick; Horst G. Langer, Wayland, both of Mass., and Earl D. Ayers, Sanford, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 13, 1972, Ser. No. 233,941
Int. Cl. H05b *3/26*
U.S. Cl. 13—31 **9 Claims**



This invention relates to a heating furnace assembly which is adapted to be coupled to and become a part of a mass spectrometer adjacent to the ion source (usually) within the instrument. The furnace is a radiant heating device utilizing elongated telescoped slotted tubular quartz tubes, the outer tube having a helical wound resistance disposed around its wall as the heating means and is adapted to be controlled by means of temperature sensing means disposed within a separate thermal analysis cell which is adapted to be disposed within the heating tube in the furnace. The tubes are adapted to be rotated with respect to each other.

ERRATUM

For Class 252—301.1 R see:
Patent No. 3,774,036

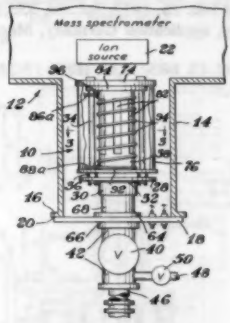
3,773,964

FURNACE ASSEMBLY FOR THERMAL ANALYSIS USE

Thomas P. Brady, Natick, and Horst G. Langer, Wayland, both of Mass., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 13, 1972, Ser. No. 233,942
Int. Cl. H05b *3/26*
U.S. Cl. 13—31 **7 Claims**

This invention relates to a heating furnace assembly which is adapted to be coupled to and become a part of a mass spectrometer adjacent to the ion source (usually) within the instrument. The furnace is a radiant heating device utilizing an elongated slotted tubular quartz tube having a helical wound resistance disposed around its wall as the heating means and is adapted to be controlled by means of temperature sensing



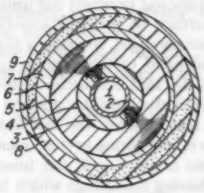
means disposed within a separate thermal analysis cell which is adapted to be disposed within the heating tube in the furnace.

3,773,965

ELECTRIC CABLES

Edward Henry Reynolds, London, England, assignor to British Insulated Callender & Cables Limited, London, England

Filed Feb. 1, 1972, Ser. No. 222,582
Int. Cl. H01b *9/06*
U.S. Cl. 174—25 G **19 Claims**

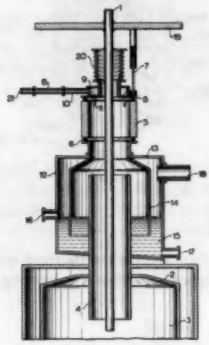


High voltage electric cables of the kind having a laminated dielectric comprising lappings of insulating tape impregnated with an insulating liquid enclosed in a liquid-impervious sheath or pipe. Such laminated dielectric is most commonly built up from lappings of paper tape although proposals have been made to use plastics film along or interleaved with paper and it has been proposed that plastics film having on one or both sides an adherent layer of fibrous material should be used. More particularly the invention relates to such a cable in which the insulating liquid is a liquefied gas which, in addition to forming part of the dielectric, acts as a cooling medium thus increasing the cable rating for a given conductor cross-section.

3,773,966
LEAD-IN-DEVICE PASSING A CONDUCTOR THROUGH THE COVER OF AN ELECTRICAL PRECIPITATION APPARATUS

Hans Ebert, Hurth-Efferen; Friedrich Wilhelm Kampmann; Ursus Thummler, both of Erftstadt Liblar, and Hugo Werner, Hurth-Hermulheim, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Feb. 26, 1973, Ser. No. 335,598
Claims priority, application Germany, Mar. 2, 1972, P 22 09 999.6
Int. Cl. B03c 3/34; H01b 17/26
U.S. Cl. 174—31.5 **9 Claims**



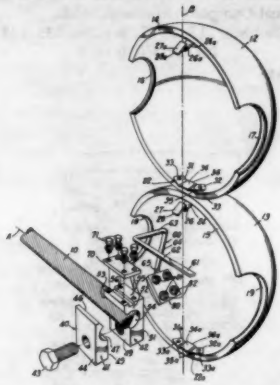
Lead-in-device receiving a conductor which passes through the cover of an electrical precipitation apparatus and down to its electrode system, the electrical precipitation apparatus being used in the production of phosphorus. A middle portion of the conductor is concentrically surrounded by a duct and a sealing cup is disposed above the cover of the electrical precipitation apparatus concentrically with respect to the conductor. Above the sealing cup, the conductor is encircled by an insulator which is radially spaced therefrom and above the insulator, the conductor is concentrically surrounded by a bellows, of which the upper end is fast with the conductor. An annular chamber is disposed between the insulator and the bellows, the lower surface of the said annular chamber being apertured to provide passages, whereby a gaseous medium can be continuously supplied to the annular space between the said insulator and the said conductor. Elastic packing rings provide seals between the insulator and the annular chamber situated above it, and between the insulator and the sealing cup situated below it, and spring pressed elements urge the annular chamber into contact with the insulator, the spring-pressed elements having mountings which bear against cross-members fast with the conductor.

3,773,967
REACTION DAMPER FOR OVERHEAD ELECTRICAL TRANSMISSION LINES

Rolland G. Sturm, Huntsville, Ala., assignor to Sturm Stress, Inc., Denver, Colo.

Filed Mar. 3, 1972, Ser. No. 231,496
Int. Cl. H02g 7/14; H02t 19/02
U.S. Cl. 174—42 **16 Claims**

A corona and vibration suppressor in the form of a hollow metal spherical body supported on an electrical cable for limited movement in any direction to reflect sensed vibrations back along the line out of phase with the vibrations caused by the wind and thus suppress the vibrations in the cable. The suppressor is formed by two opposed hemispherical shells joined at their planar edges and secured closed by diametrically opposed detents. Semicircular recessed portions at the abutting edges of the shells define diametrically opposed holes, through which the cable passes and a single torsion bar, having *x*, *y* and *z* components, mounts the body on the cable.

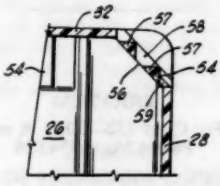


Two embodiments of the suppressor are shown, one having a bolted clamp for affixing the torsion bar to the cable and the other having an over-the-center clamp.

3,773,968
ELECTRICAL JUNCTION AND SWITCH BOXES

Donald G. Copp, Mantua, Ohio, assignor to Indian Head Inc., New York, N.Y.

Filed Apr. 12, 1972, Ser. No. 243,317
Int. Cl. H02g 3/12
U.S. Cl. 174—53 **15 Claims**

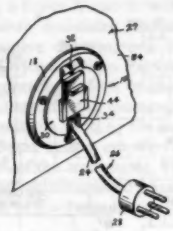


A box for mounting in walls and ceilings for the purpose of enclosing the ends of electrical cables or conduits, and providing access to terminals or contacts connected to the ends of the cables or conduits through a switch plate or socket secured to one side of the box. The box is constructed of molded, synthetic resin and is characterized in having a pry-out panel assembly disposed between two walls of the box. Each pry-out panel assembly is located in a plane extending at an angle of from about 30° to about 60° to the planes of the walls of the box between which the assembly is located. Each pry-out panel assembly includes a plurality of elongated ribs of right triangular cross-section, with the base of the triangle lying in a plane extending at an angle of 30° to 60° to the plane of at least one wall of the box, and defining an open slot into the box between the ribs. At least one bridge web connects the triangular cross-sectioned ribs to the remainder of the box.

3,773,969
HATCH FOR A POWER SUPPLY CORD

Charles E. Geisel, 55633 Ash Rd., Osceola, Ind.

Filed Feb. 25, 1972, Ser. No. 229,316
Int. Cl. H05k 5/03
U.S. Cl. 174—67 3 Claims



A hatch for a power supply cord. The hatch includes a housing defining a cord receiving recess. Two openings are formed in the housing in communication with the recess therein. A lid which is pivotally mounted to the housing covers one opening in the housing and is shiftable from a closed position into an open position to allow access into the recess. The lid has an opening therein which allows the power supply cord to extend through the housing when it is connected to a power source. A slidable door is carried by the lid to cover the opening therein when the lid is in its closed position and the power supply cord is withdrawn from the lid opening.

ERRATUM

For Class 174—52 S see:
Patent No. 3,774,232

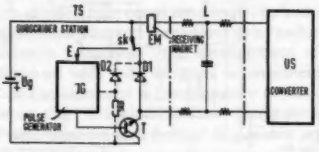
ERRATUM

For Class 178—7.5 D see:
Patent No. 3,774,233

3,773,970
TELEPRINTER SUBSCRIBER STATION APPARATUS FOR SINGLE CURRENT OPERATION WITH BACK POTENTIAL AT THE SUBSCRIBER STATION

Helmut Fiedler, Geretsried, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 20, 1971, Ser. No. 164,384
Claims priority, application Germany, July 29, 1970, P 20 37 660.7
Int. Cl. H04l 17/02
U.S. Cl. 178—3 4 Claims

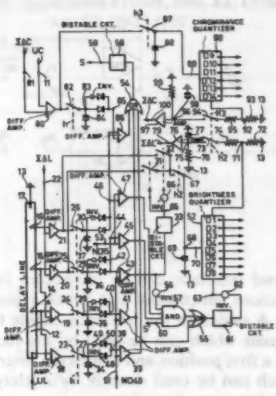


In teleprinter subscriber station circuitry functioning according to the single current principle an auxiliary current source is described whereby a back potential is generated. The auxiliary current source can be connected to a subscriber input line over a controllable switch, which may be a transistor. The auxiliary current source is so connected at the beginning of a start step only for a period of time which is short relative to the duration of the start step. The switch may be controlled by a pulse generator.

3,773,971
ARRANGEMENT FOR DIGITAL ENCODING OF COLOUR TELEVISION VIDEO SIGNALS

Philippe Sainte-Beuve, Paris, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,189
Claims priority, application France, Apr. 2, 1970, 7011878
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 R 9 Claims



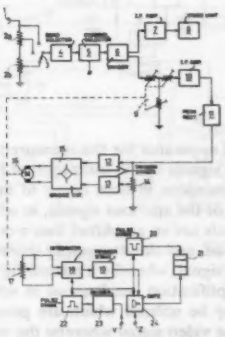
An arrangement for digital encoding of a colour television video signal for transmission by delta-modulation, in which the choice of the sampling for quantising and coding an transmission of information depends upon the magnitude of the variations of the moment of the brightness signal and of the colour signal and upon the variations appearing during the next samplings.

The method is used for retransmission of the signals E'Y, D'B and D'R of the SECAM system from a communication satellite.

3,773,972
TELEVISION AERIAL MEASUREMENT RECEIVER

Gunter Kroll, Hamburg; Herbert Struwe, Ellerbeck, and Gunther Fliess, Hamburg, all of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,728
Claims priority, application Germany, Feb. 26, 1971, P 21 09 220.6
Int. Cl. H04n 7/02
U.S. Cl. 178—7.3 R 7 Claims



A system for measuring signal stength wherein line flyback pulses are applied to a digital counting means during a count-

ing period proportional to the signal level, which counting means are periodically reset to zero by the field flyback pulses.

3,773,973

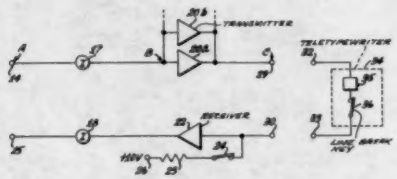
UNIVERSAL DATA-COMMUNICATIONS INTERFACE

James A. Kennedy, Phoenix, Ariz., assignor to Honeywell Information Systems, Inc., Waltham, Mass.

Filed Aug. 3, 1971, Ser. No. 168,651

Int. Cl. H04l 5/14

U.S. Cl. 178—58 R **4 Claims**



A universal interface can be connected between a data-communications subchannel and either a modem or a teletypewriter. A switch in the interface causes the interface to provide signals which can be used by the modem when the switch is in a first position and causes the interface to provide signals which can be used directly by a teletypewriter when the switch is in a second position.

3,773,974

METHOD AND APPARATUS FOR MEASUREMENT OF SPURIOUS VOLTAGES IN VIDEO SIGNALS

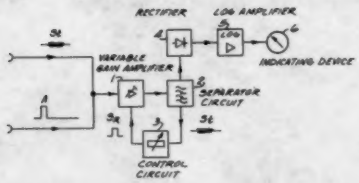
Herbert Grosskopf, Neukeferloh, Germany, assignor to Rohde & Schwarz, Muenchen, Germany

Filed Apr. 23, 1971, Ser. No. 136,959

Claims priority, application Germany, Apr. 25, 1970, P 20 20 312.7

Int. Cl. H04n 5/24

U.S. Cl. 178—6 **7 Claims**



A method and apparatus for the measurement of spurious voltages in video signals by the utilization of blanking periods in which no fluctuations in time occur in the image signals other than those of the spurious signals, in which method the interference signals are so amplified that a constant spurious voltage is produced, and simultaneously therewith so amplifying an indicating signal, whereby a measuring voltage proportional to the amplification results, and in which portions of video signals may be utilized which are proportional to the white value of the video signal whereby the magnitude of the resulting amplified measuring voltage is proportional to the white value and invertedly proportional to the spurious voltage.

3,773,975

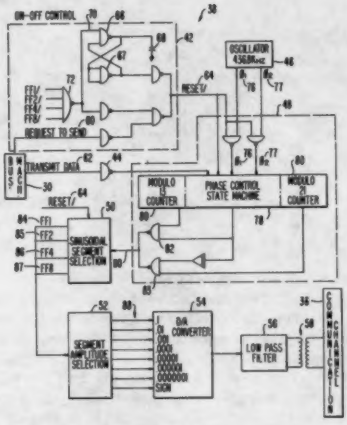
FSK DIGITAL TRANSMITTER

Leo B. Koziol, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 17, 1971, Ser. No. 209,029

Int. Cl. H04l 27/12

U.S. Cl. 178—66 R **8 Claims**



A digital transmitter used in data sets for digitally constructing sine waves to transmit mark and space information signals over a communication channel. A medium frequency oscillator supplies the basic timing for selecting consecutive segments of a sine wave and an amplitude selector generates signals representing the amplitudes of each segment to be supplied to a digital to analogue converter. Through several steps of frequency division, the phase angle error at the frequency shifts, due to mark and space transistion, is reduced to an extremely small angle. The apparatus shown is applicable to the several frequency ranges of data sets.

3,773,976

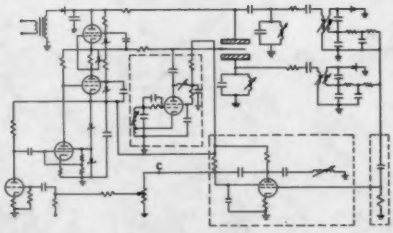
ELECTROSTATIC LOUDSPEAKER AND AMPLIFIER

Harold N. Beveridge, 1616 Franceshi Rd., Santa Barbara, Calif.

Division of Ser. No. 833,952, June 17, 1969, Pat. No. 3,668,335. This application June 5, 1972, Ser. No. 259,516

Int. Cl. H03f 1/00

U.S. Cl. 179—1 A **13 Claims**



An electrostatic loud speaker system is shown which combines a balanced transducer, an amplifier and an enclosure each of unique construction which together permit the reproduction of frequencies over the full audio range. The electrostatic transducer is shown surrounded by an enclosure

that has an outlet passage preferably significantly smaller than the transducer and an acoustic lens preferably guides the sound through the narrow outlet into a wave form of circular cross-section. By these provisions a low resonant frequency for the speaker and wide dispersal of the directional high frequencies are achieved in an enclosure of limited size. The fixed electrodes of the transducer are of substantial thickness and are formed of high dielectric constant material, achieved preferably by molding a lower K matrix with additives raising K and lowering volumetric resistivity. The amplifier is formed of series-connected active devices, one controlled by the other. A third active device amplifies the audio signal. Its output is connected to control the first of the series-connected devices and the output terminal of the amplifier is connected through a resistive feedback path to the output of the third device. A further feedback system employs a carrier wave applied to the diaphragm of the transducer. The resulting signal on the electrodes is differentiated and negatively fed back to damp speaker response at low frequency resonance.

3,773,977
METHOD OF ENCIPHERED INFORMATION TRANSMISSION BY TIME-INTERCHANGE OF INFORMATION ELEMENTS

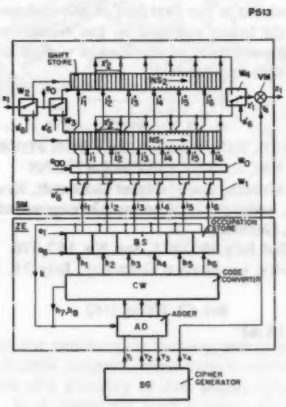
Gustav Guanella, Zurich, Switzerland, assignor to Patelhold Patentverwertungs-& Electro-Holding AG, Glarus, Switzerland

Filed June 21, 1971, Ser. No. 154,851

Claims priority, application Switzerland, July 7, 1970, 10227/70

Int. Cl. H04k *1/06;* **H04l** *9/00*

U.S. Cl. 179—1.5 S **16 Claims**



An information signal train which may, for example, be an audio signal, is divided into equal time intervals and temprarily stored. Each stored element is read out in a random pattern so as to randomly "scramble" the arrangement of the elements as compared with their original arrangement. The "-scrambling" of the elements is continuously monitored so as to prevent more than one element from being shifted to the same (new) time position and further to prevent any gaps in the transmitted signal train.

The process is effectively reversed at the receiving end which is provided with a similar random generating and deciphering means operating in synchronism with the enciphering means at the transmitter facility. Shifting of the element positions may be confined to a group containing a predetermined number of elements or alternatively may be progressively shifted to new positions without concern for limiting shifting in time of elements to a group of a predetermined number of elements.

Additional techniques may be employed to reverse polarity of selected elements or to randomly superimpose other signals upon selected ones of the elements in a random fashion.

3,773,978
TIME SWITCH FOR CONNECTING MULTIPLEX SYSTEMS

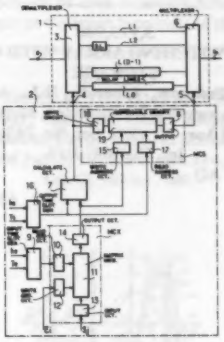
Guy Le Roy, Lannion, France, assignor to Societe Lannionnaise D'Electronique, Lannion and Compagnie Industrielle Des Telecommunications Cit-Alcatel, France

Filed Dec. 22, 1971, Ser. No. 210,762

Claims priority, application France, Dec. 22, 1970, 7046275

Int. Cl. H03j *3/00*

U.S. Cl. 179—15 AQ **9 Claims**



Time switch comprising propagation means (delay lines) in which the incoming data is propagated during a certain time, that time being determined by the difference in actual time separating the incoming multiplex channel from the outgoing multiplex channel which distributes the data. The difference in actual time may change from frame to frame.

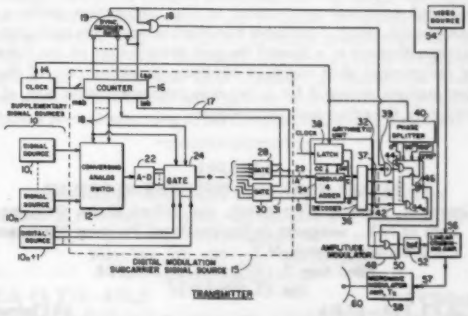
3,773,979
MULTIPLEXED VIDEO AND SUBCARRIER MICROWAVE COMMUNICATIONS SYSTEM

Donald Kirk, Jr., and Michael J. Paolini, both of Petersburg, Fla., assignors to Digital Communications Inc., St. Petersburg, Fla.

Filed Mar. 30, 1972, Ser. No. 239,629

Int. Cl. H04j *1/20*

U.S. Cl. 179—15 FD **18 Claims**



A microwave communications system propagates video information and a high grade wide band subcarrier channel not-

withstanding substantial differential phase and differential gain (system nonlinearities) exhibited by the microwave transmitter. The supplementary information is quantized (if not already digital in form), and is employed to differentially modulate (in discrete increments given by multiples of $\pi/2$) the phase of a quadraphase carrier, i.e., in a non-return to zero mode of operation.

At the receiver, the modulated subcarrier spectrum is recovered by filtering, and the subcarrier information recovered by comparing the subcarrier phase difference between consecutive time slots. Since the absolute amplitude of differential phase varies slowly at the transmitter vis-a-vis the subcarrier modulation frequency (substantially 15.734 kHz versus several hundred thousand Hz, or several megacycles), error-free subcarrier demodulation may be effected even in systems exhibiting large differential phase variations.

3,773,980

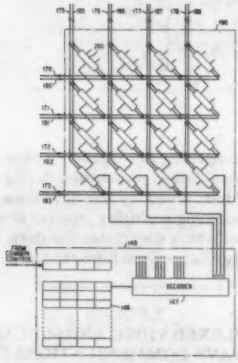
BILATERAL SWITCHING ARRAY WITH CROSSPOINT STORAGE

Thomas Josep Pedersen, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 13, 1972, Ser. No. 243,640

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 AQ **11 Claims**



An improved switching array of the type having data storage elements connected at the crosspoints is provided. The switching array has two sets of input highways and two sets of output highways. Both connections required for each two-way communication on these highways are established at one of the bilateral data storage elements. Advantage is taken of spatial and temporal symmetries in the connection paths to achieve this result. Favorable hardware economy in each data storage element is achieved through interchange of the roles of component shift registers between providing one of the connections required for a two-way communication and, alternately, the other such connection.

3,773,981

PARALLEL TONE MULTIPLEXER-RECEIVER

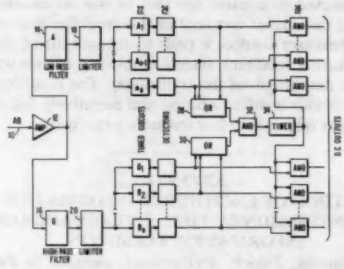
George R. Stilwell, West Nyack, and Alfred Weiss, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,324

Int. Cl. H04j *3/16*

U.S. Cl. 179—15 BA **10 Claims**

Parallel tone signals received on a plurality of input lines are digitized. Specific tone combinations represent different data, such as a particular digit or character. A received signal is considered a valid data signal if it is of at least a predetermined minimum time duration. The digitized signals are read into individual shift registers for each line. The length of each shift register is sufficient to store two data signals, each of the predetermined minimum valid time duration. The tone signals received on the input lines are asynchronous and of variable time duration. A multiplexer sequentially reads out the storage registers at a rate which is relatively high compared to the rate at which the digitized signals are entered into the registers. The time-division-multiplexed serial samples from all registers are reconverted to the input tone signals, frequency



separated and detected in a multi-frequency receiver, and then applied to a demultiplexer so that the detected signals appear on a plurality of output lines corresponding to the plurality of input lines. Even though each register is completely read out during each sample time by the multiplexer, the last half of the signal stored in a register is recirculated back into the register to be read out as the first half of the register's contents the next time the line is sampled by the multiplexer, thereby eliminating the possibility of the loss of a digit or character during the multiplexing process.

3,773,982

CROSS-SWITCHING CIRCUITRY FOR FOUR-WIRE EXCHANGE INSTALLATIONS

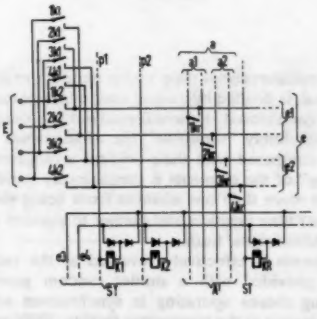
Roman Adler, Munich, and Hartmut Gebhardt, Krailling, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 30, 1971, Ser. No. 167,370

Claims priority, application Germany, July 31, 1970, P 20 38 213.2

Int. Cl. H04q *3/42*

U.S. Cl. 179—18 AF **9 Claims**



Circuitry is described for use in a telecommunication exchange installation which has switching matrices for completing connections of four-wire lines. The exchange uses data processing switching techniques, and accordingly, an appropriate data processing or central control device is pro-

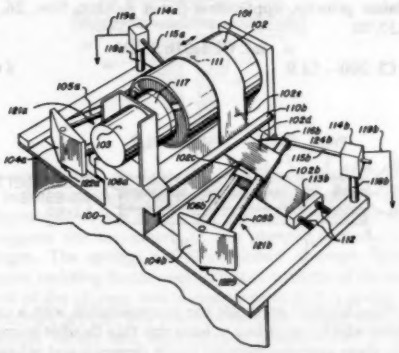
vided. The central control devices in various exchanges are connected to each other over data channels adjacent to the trunk lines for the transmission of dial characterizing signals (setting signals, line identifying signals and the like). All four-wire lines, i.e., local and long distance connection lines, and all switching devices (dial receiving registers, forwarding registers, connecting units and the like) are all similarly connected, with respect to the two, two-wire branches of the incoming or outgoing transmissions, to the terminal of the switching matrix inputs of a switching matrix having reverse grouping. Each switching matrix input is assigned a crossing relay serving to selectively cross the wire pairs. The crossing relay is associated with the switching matrix in construction and in terms of control. In each connection switched over the switching matrix one of the crossing relays at only one of the switching matrix inputs involved in the switching operation is activated.

3,773,983

LATERAL STRIP CONTROL APPARATUS

Dale Larson, Minneapolis, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed June 7, 1972, Ser. No. 260,602
Int. Cl. G11b *15/43, 15/60, 27/22*
U.S. Cl. 179—100.2 T **52 Claims**



Apparatus for transversely moving and positioning a segment of a flexible magnetizeable strip to permit access to a specified one of a plurality of data tracks thereon by a data transducer. In a preferred embodiment, the transducer is mounted in a rotating drum partially encircled by the strip and the strip segment is transversely moved by two pairs of parallel bars or cylinders through which the strip runs. In each pair, the strip partially encircles each bar in opposite directions by passing between them. By angling the pairs of bars with respect to the strip itself the portion of the strip between the pairs of bars may be caused to move to desired transverse positions.

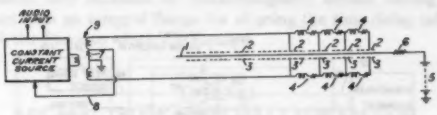
3,773,984

ELECTROSTATIC LOUDSPEAKER WITH CONSTANT CURRENT DRIVE

Peter James Walker, Huntingdon, England

Continuation of Ser. No. 736,755, June 13, 1968, abandoned. This application Nov. 3, 1970, Ser. No. 86,614
Int. Cl. H04r *19/02*
U.S. Cl. 179—111 R **7 Claims**

With the objective of obtaining a far field axis pressure which is frequency-independent, an electrostatic loudspeaker that is acoustically transparent over the frequency range of interest, for instance the audio frequency range, comprises separately accessible coplanar sections or individual units arranged to carry a common polarizing charge per unit area and



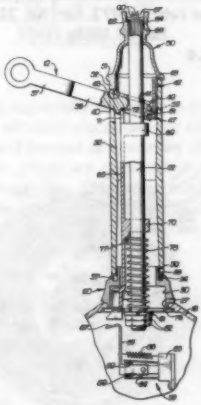
which are connected as the parallel components of an electrical network so organized that the vector sum of the currents in the individual sections or units is always directly proportional to the total current at the input terminals of the network.

3,773,985

TELEPHONE ACTUATING MECHANISM

Council A. Tucker, Glendale, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.

Filed Jan. 3, 1972, Ser. No. 214,887
Int. Cl. H04m *1/08*
U.S. Cl. 179—164 **15 Claims**



An upright telephone has a base housing with a column extending vertically from the housing. A guide tube extends coaxially within the column from the base housing to a top closure cap which mounts a transmitter. The entire assembly between the housing and the cap is loaded in compression by the guide tube, and the loaded assembly is held together by this compressive load. The guide tube also serves to vertically orient an actuator and as a conduit for conductors from between the transmitter and the base. A receiver hook extends from a pivotal mounting in the column for cradling a receiver.

3,773,986

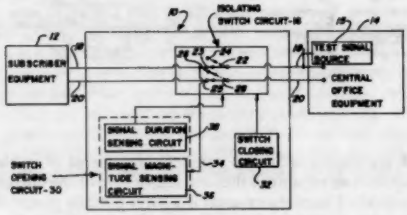
TELEPHONE LINE TEST ISOLATION APPARATUS

Hubert J. Tremblay, Roselle, Ill., assignor to Communication Systems Corporation, Morton Grove, Ill.

Filed Dec. 13, 1971, Ser. No. 207,465
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **5 Claims**

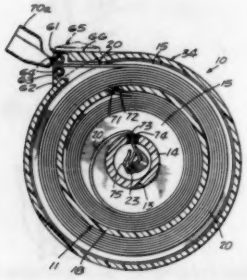
There is disclosed an apparatus, which is located at a subscriber equipment installation, for remotely disconnecting the subscriber equipment from the subscriber line and its associated central office equipment to facilitate testing of the central office equipment. The apparatus comprises a means

for remotely applying a signal of preselected magnitude from the central office to the apparatus, a circuit responsive to the signal for opening the connection between the subscriber equipment and the subscriber line, thereby remotely isolating



the subscriber equipment from the central office equipment, and a circuit for automatically reconnecting the subscriber equipment to the subscriber line after a preselected time interval.

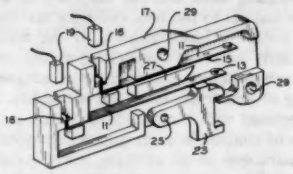
3,773,987
CABLE RETRACTOR
Raymond Davis, 13942 Brenan Way, Santa Ana, Calif., and Poul B. Roulund, 24052 Gemwood Dr., El Toro, Calif.
Filed Feb. 7, 1972, Ser. No. 224,142
Int. Cl. H02g *11/02*
U.S. Cl. 191—12.4 **7 Claims**



An electrical cable retractor is provided with a reel on which a length of electrical cable is attached and wound in such a manner as to permit the inner end of the cable to remain fixed to a stationary drum on which the reel rotates while the outer portion of the length of cable is wound on or unwound from the reel. The electrical cable stored on the reel of the retractor is thus permitted to be connected to a power source without the need of brushes and slip rings. A spring motor is provided on the retractor for reversely rotating the reel so that the portion of the length of cable that is withdrawn from the retractor is maintained taut at all times.

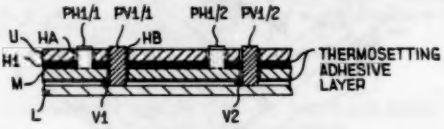
3,773,988
SWITCH WITH INTERCHANGEABLE BLADES
John G. Radice, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.
Filed May 12, 1972, Ser. No. 252,704
Int. Cl. H01h *21/12*
U.S. Cl. 200—6 R **7 Claims**

A switch with two identical interchangeable blades which permit ease of contact replacement and extended switch life is shown. Each blade has a top and a bottom contact so that when assembled in a housing the top contact of one is aligned with the bottom contact of the other. By simply interchanging blades the spare contact may be put into use thus offering



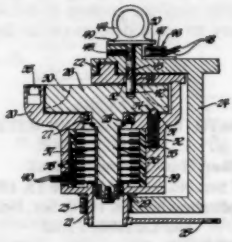
quick and inexpensive contact replacement. Other features include means of stacking the switches with each switch in the stack providing a cover for the one before it thus requiring only one cover for the whole stack.

3,773,989
TOUCH-WIRE OVERLAY MASKS FOR CATHODE RAY TUBES
William Frank Hacon, Brentford, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland
Filed Jan. 22, 1971, Ser. No. 200,720
Claims priority, application Great Britain, Nov. 26, 1970, 56,537/70
Int. Cl. H01h *35/00*
U.S. Cl. 200—52 R **5 Claims**



A "touch-wire" mask for use in conjuncion with a cathode ray tube which comprises at least one thin flexible transparent plastic sheet carrying metallic touch elements and related conductors formed by printed circuit techniques.

3,773,990
TRANSMISSION CONTROL AND STEERING ARRANGEMENT WITH SENSOR SWITCH ASSEMBLY
Raymond J. Maci, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 15, 1972, Ser. No. 226,589
Int. Cl. H01h *9/06, 21/10*
U.S. Cl. 200—61.54 **8 Claims**



The drawings illustrate a steering and transmission control arrangement including a handlebar-type steering mechanism

incorporating a readily visible indexing mechanism which is rotatable with the steering mechanism and indexable relative thereto without requiring the operator to remove either of his hands from the steering mechanism. A plurality of projections formed on the shift control mechanism may comprise, for example, cams or wafers, either of which serve to respectively engage switches mounted on the steering mechanism, depending upon the angular orientation therebetween, for selecting desired transmission drive ratios.

3,773,991

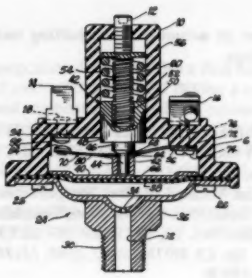
SNAP ACTION PRESSURE RESPONSIVE CONTROL DEVICE WITH SINGLE STROKE MAKE AND BREAK

Irving W. Krieger, St. Charles; John J. Peluchiwski, Medinah, and Dale F. Willcox, Aurora, all of Ill., assignors to Furnas Electric Company, Batavia, Ill.

Filed July 9, 1971, Ser. No. 161,237

Int. Cl. H01h *35/34, 13/38, 5/20*

U.S. Cl. 200—83 P **8 Claims**



The application discloses a pressure controlled switch which includes a plunger actuated by a fluid pressure responsive diaphragm. A pair of coil springs having different spring rates oppose the movement of the plunger caused by the diaphragm. The springs are dimensioned to exert different movement resisting forces over different portions of the length of travel of the plunger and in cooperation with a spring contact structure provide low pressure dropout values, high pressure cutout values and intermediate pressure cut-in values operating the switch.

3,773,992

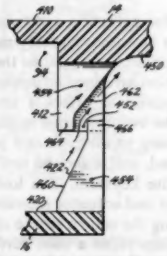
CIRCUIT BREAKER CASE

Charles Mune, Trenton, N.J., assignor to Heinemann Electric Company, Trenton, N.J.

Filed Aug. 2, 1971, Ser. No. 168,320

Int. Cl. H01h *33/08*

U.S. Cl. 200—144 R **8 Claims**



A molded case circuit breaker having an arcing chamber. The case has a recessed end wall forming a passage and also forming a slot intersecting with the passage through which arc gases are vented against a barrier. The arc chamber is defined in part by an insulator plate having a tang between the side plates of the movable arm which is free to expand and contract without binding with the movable arm. The circuit breaker also includes an electromagnetic device having a spool with an integral flange for aligning the time delay tube with the frame to which it is secured.

3,773,993

ARC ELECTRODE, ESPECIALLY FOR VACUUM SWITCHES

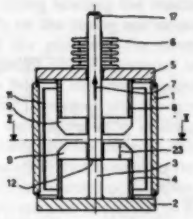
Joachim Amsler, Unterentfelden, Switzerland

Filed Mar. 7, 1972, Ser. No. 232,480

Claims priority, application Switzerland, Oct. 8, 1971, 14702/71

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **7 Claims**



An arc electrode, especially for vacuum switches, comprising two oppositely situated electrodes for taking-up the base points of the arcs and formed of a number of plates. The narrow surfaces of the plates are disposed to confront the oppositely situated electrodes. Gaps or spaces are maintained free between the individual plates, the width of such gaps being at least equal to the thickness of a plate.

3,773,994

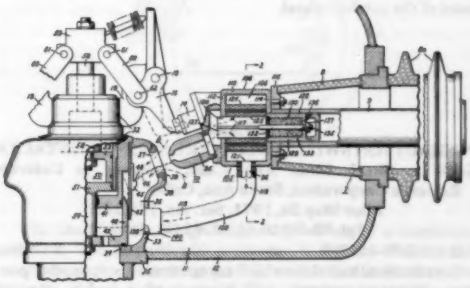
DOUBLE-EXHAUST GAS-BLAST CIRCUIT BREAKER

John W. Beatty, Newton Square, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed June 30, 1972, Ser. No. 267,945

Int. Cl. H01h *33/86*

U.S. Cl. 200—148 B **8 Claims**



A double-exhaust gas-blast circuit breaker comprises two spaced-apart electrodes, a main flow channel leading past one electrode, and a vent passage leading past the other electrode. A blast valve located downstream from said one electrode controls flow through both the main flow channel and the vent

passage. Control of flow through the vent passage by the blast valve is made possible by a tube of insulating material bridging the inter-electrode gap, receiving flow at one end from the vent passage-and exhausting into the main flow channel upstream of the blast valve. Cooling and filtering means between the vent passage and the insulating tube cools and filters the flow entering said tube.

3,773,995

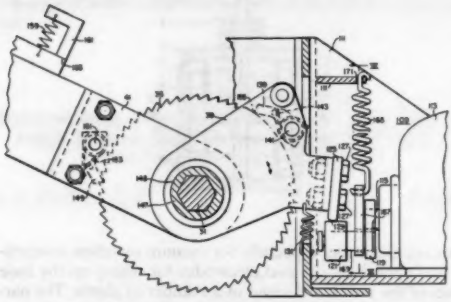
MOTOR ADVANCED SPRING CHARGING PAWL AND RATCHET MECHANISM WITH SPRING ASSIST

Norman Davies, Trafford, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 27, 1972, Ser. No. 301,690

Int. Cl. H01h *3/30*; **F03g** *1/08*

U.S. Cl. 200—153 SC **11 Claims**



A circuit breaker operating mechanism characterized by a crank shaft, a closing spring connected to the crank shaft, motor-operating structure for driving the crank shaft to charge the closing spring, a ratchet wheel mounted on the crank shaft, a reciprocating pawl structure supported to drive the ratchet wheel, a motor comprising an output shaft and cam means or driving means on the output shaft operable upon each revolution of the output shaft to operate the pawl structure to advance the ratchet wheel to thereby charge the closing spring, the cam means being operable in directions toward and away from the reciprocating pawl structure, and spring means attached to the output shaft for urging the reciprocating pawl structure only in the direction of advancement of the ratchet wheel.

3,773,996

PUSHBUTTON SWITCH WITH COIL SPRING CONTACTS

Keith A. Sharf, Santa Ana, Calif., assignor to Controls Research Corporation, Santa Ana, Calif.

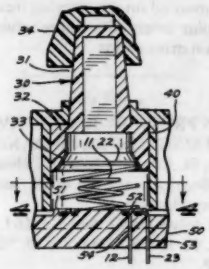
Filed May 20, 1971, Ser. No. 145,283

Int. Cl. H01h *13/52*, *13/32*, *1/00*

U.S. Cl. 200—159 R **2 Claims**

An electrical switch in which contacts are comprised of portions of two concentric, current conductive springs. One of the springs has an open end and the other of the springs has an end that is closed by the presence of a conductive portion extending thereacross. Linear movement of one spring with respect to the other causes the edge portions of the open ended spring to engage the conductive portions at radially spaced apart positions on the other spring to provide at least two conductive contact areas.

A mounted assembly may provide a base for holding the springs in a predetermined initial position and relationship and



a mounting for an actuator for imparting motion to at least one of the springs.

3,773,997

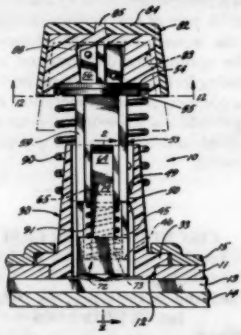
KEY ASSEMBLY DIAPHRAGM SWITCH ACTUATOR WITH OVERTRAVEL AND FEEL MECHANISMS

Pat. E. Evans, Costa Mesa; Meryl E. Miller, Palos Verdes Peninsula, and Michael Muller, Newport Beach, all of Calif., assignors to Datanetics Corporation, Fountain Valley, Calif.

Filed Dec. 13, 1971, Ser. No. 207,142

Int. Cl. H01h *13/50*, *3/48*, *13/36*

U.S. Cl. 200—159 B **14 Claims**



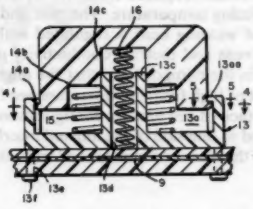
A key assembly for actuating a diaphragm switch, and including a housing, a keystem movably mounted on the housing, and a switch actuator coupled to the keystem through a lost-motion connection arranged so a relatively large stroke of the keystem is required to effect a small actuator motion needed to operate the switch. A coil spring biases the keystem away from the housing to an extended position in which the switch is not actuated, and a second coil spring urges the actuator away from the keystem. The lost-motion connection between the keystem and actuator provides positive retraction of the actuator during the return stroke of the keystem. A leaf spring on the keystem rides a cam surface or ramp on the housing, and the ramp is shaped to modify the effect of the coil springs such that the keystem tends to toggle past the point of switch actuation to prevent switch jitter and to provide a tactile signal that actuation has occurred.

3,773,998

PEDESTAL AND SPRING MEMBER FOR KEY ACTUATOR OF DIAPHRAGM SWITCH

Richard E. Seeger, Jr., Topsfield, and John G. Coulter, Reading, both of Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed Oct. 16, 1972, Ser. No. 297,636
Int. Cl. H01h *13/06, 13/52*
U.S. Cl. 200—159 B 7 Claims



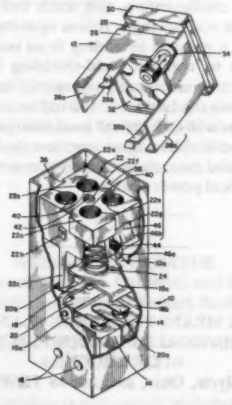
A keyboard actuator which includes a first member adapted to be supported over a circuit board having a conductive pattern thereon and supporting a resilient conductive layer by way of an insulator layer having a window therethrough in line with at least a portion of the conductive pattern, a second member snapable into the first member and slidable while held therein, first and second resilient biasing means, the first biasing means separating the members and the second biasing means extending between the second member and the conductive layer.

3,773,999

RELAMPING ARRANGEMENT FOR ILLUMINATED PUSHBUTTON

Marlo Wayne Groezinger, Freeport, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 14, 1972, Ser. No. 280,510
Int. Cl. H01h *9/16, 9/18*
U.S. Cl. 200—167 A 8 Claims



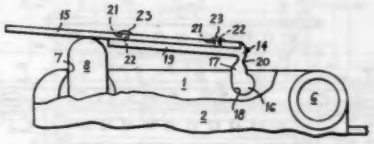
An illuminated pushbutton switch having a pushbutton which is removable from the remainder of the structure so as to allow for relamping and a defeatable movement limiting device which upon reassembly of the pushbutton initially prevents switch actuation.

3,774,000

LEVER OPERATED ELECTRICAL SWITCHES

Donald Courtney Beer, Newick, England, assignor to Otehall Limited, Burgess Hill, Sussex, England

Filed Sept. 1, 1972, Ser. No. 285,584
Claims priority, application Great Britain, Sept. 9, 1971, 42191/71; Jan. 21, 1972, 3114/72
Int. Cl. H01h *3/04*
U.S. Cl. 200—172 A 9 Claims



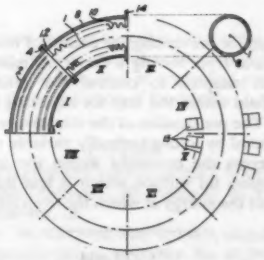
A lever operated microswitch comprises a switch mechanism actuated via plunger slidably mounted in an opening in the switch casing housing the mechanism, and a lever mounted externally on the casing and arranged to bear on the projecting end of the plunger. The lever may be entirely moulded from resilient plastics material and be fixed to the switch casing by a boss at one end engaged in a cooperating groove in the casing. Alternatively, the lever may comprise a lever arm formed from metal strip attached to a hinge piece moulded from resilient plastics material, this hinge piece being fixed to the switch casing by a boss at its free end engaged in a cooperating groove in the casing. In either event, the plastics part is flexible and permits the lever to be rocked so as to depress the plunger and actuate the switch mechanism.

3,774,001

CHAMBER FOR THE HIGH-FREQUENCY HEATING OF A CONDUCTING MEDIUM

Terenzio Consoli, Meylan, France, and Shigeo Nagao, Sendai, Japan, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Nov. 15, 1972, Ser. No. 306,912
Claims priority, application France, Nov. 22, 1971, 7141741
Int. Cl. H05l *35/06*
U.S. Cl. 219—10.65 15 Claims

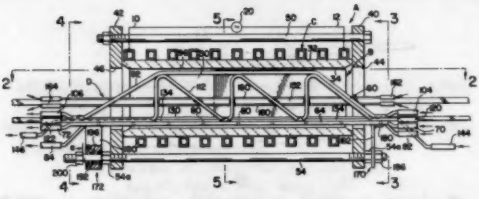


The chamber for a high-frequency heating of a conducting medium, and in particular a plasma, is formed of assembled sections each comprising joining means and a shell section formed of leak-tight material. The chamber essentially comprises at least one so-called composite section which contains a high-frequency winding within the shell section and is provided with a plurality of metallic rods forming a cage section between the conducting medium and the high-frequency winding, the rods being arranged such that substantially all the particles constituting the conducting medium can bombard only a metallic surface.

3,774,002
GUIDE MEANS FOR INDUCTION HEATING COIL

Fred C. Jensen, Euclid, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Nov. 21, 1972, Ser. No. 308,398
Int. Cl. H05b 5/08
U.S. Cl. 219—10.67 11 Claims

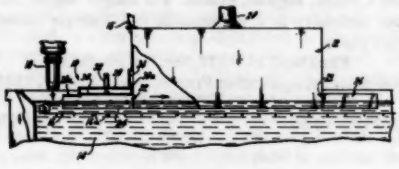


In an induction heating installation including a generally fixed multi-turn induction heating coil having a central workpiece receiving passageway wherein the guide means through the passageway includes a bridge supported on opposite ends of the passageway and externally of the coil.

3,774,003
ADJUSTABLE END TRAPS

Harold B. Kaufman, Jr., New York, and Howard Roth, Bronx, both of N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

Filed July 27, 1971, Ser. No. 166,539
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 6 Claims



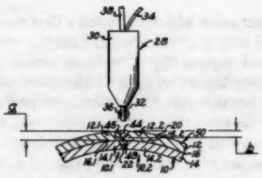
An end trap for preventing the escape of microwave energy in a microwave fryer having a conveyor passing through an open port is adapted to control the penetration of the microwave field within the trap for adjusting critical cooking parameters. The penetration of the microwave field within the trap is regulated by a longitudinally variable metallic surface extending across the conveyor within the trap at a height above the frying fat surface which is less than one-half the wave length of the energy at which the oven is operated.

3,774,004
TUBING AND METHOD AND APPARATUS FOR MAKING

Rene A. Dubuc, Attleboro; Sheldon S. White, Brookline, and Wesley V. Dudovicz, Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 10, 1971, Ser. No. 206,716
Int. Cl. B23k 31/06
U.S. Cl. 219—61 17 Claims

A tubing is formed from a composite material embodying a layer of metal such as stainless steel having a relatively high fusing temperature which is metallurgically bonded along an interface to a layer of another metal such as copper having a relatively lower fusing temperature. The composite material is arranged in a tubular configuration with the edges of the material in juxtaposed relation to each other so that corresponding edges of the metal layers and the interface in the composite are aligned with each other. The layer of metal of relatively high fusing temperature is disposed either on the interior or exterior surface of the tubing configuration as preferred. Welding heat is then applied to the surface of the tubular configuration which is formed by the layer of metal of relatively high fusing temperature, this welding heat being applied to this surface at the aligned edges of this layer of metal. In this way, the welding heat is applied to the composite material at a location spaced from the layer of metal of relatively lower fusing temperature. The rate and duration of this application of welding heat is regulated with respect to the relative thickness and thermal conductivity properties of the metal layers in the composite so that the aligned edges of the layer of metal of high fusing temperature are fused together at the noted surface of the tubular configuration with this fusion being confined to one side of the aligned interface edges of the composite so that this fusion is spaced from the other layer of metal in the composite but so that a sufficient part of this applied welding heat is conducted through the remaining unfused portion of said metal of high fusing temperature to fuse the aligned edges of the layer of metal of relatively lower fusing temperature to each other, preferably throughout the thickness of this other metal layer. Where the layer of metal of relatively high fusing temperature is located on the interior surface of the noted tubular confuguration, a novel welding torch is fitted inside the tubular configuration for applying welding heat to the aligned edges of that metal layer from inside the tubing configuration, this torch including an electrically conductive rod having a recess opening laterally of the rod and having a passage extending from one end of the rod into the recess to conduct weld-shielding inert gas to the recess, an electrode electrically connected to the rod extending upwardly from the bottom of the rod recess in spaced relation to the recess walls, electrical insulation peripherically surrounding the rod and having an aperture therein aligned with the rod recess, and means electrically connecting said one rod end to an electrical power source.



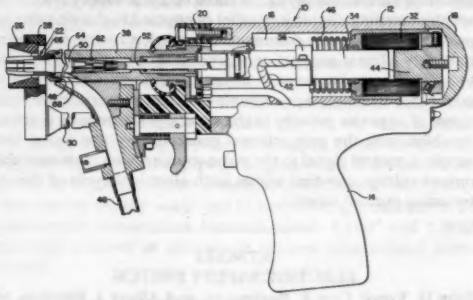
3,774,005
CHUCKING MEANS FOR LARGE FLANGED STUDS WHEN AUTOMATICALLY FEEDING STUDS THRU REAR OF CHUCK

Steve Spisak, Elyria, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 23, 1970, Ser. No. 31,181
Int. Cl. B23k 9/20
U.S. Cl. 219—98 5 Claims

A chuck assembly for holding headed studs by the shank including a split sleeve for holding the shank as the stud is passed head first through the resilient tapered fingers of the

chuck. The fingers of the chuck are first spread open to pass the head then allowed to snap onto the outside surfaces of the



split sleeve forcing it into abutting circumscribed holding relation with the shank.

3,774,006

RESISTANCE WELDING CONTROL

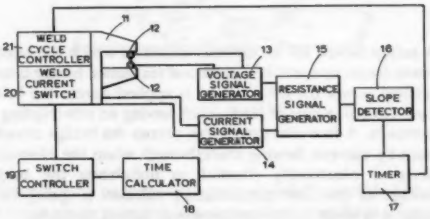
Derek James Pasquire, Witney, and Peter Edward Burton, Wallingford, both of England, assignors to Press Steel Fisher Limited, Cowley, Oxford, England

Continuation of Ser. No. 54,223, July 13, 1970, abandoned. This application Dec. 20, 1971, Ser. No. 210,282

Claims priority, application Great Britain, July 16, 1969, 35,817/69; Nov. 12, 1969, 55,347/69

Int. Cl. B23k *9/10*

U.S. Cl. 219—111 **13 Claims**



The time for which welding current, in a resistance welding operation, is allowed to flow is made up of two consecutive parts. The first is that taken by the rate of change of weld resistance to reach a predetermined value. The second is computed as a function of the time for the rate of change to reach said value.

3,774,007

WELDING APPARATUS

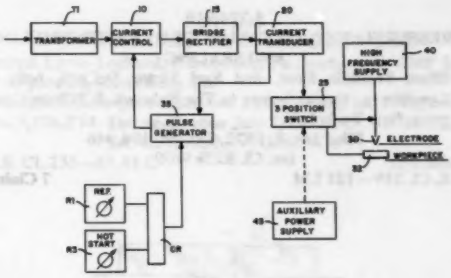
Wilbert A. Chiasson; Ralph E. Barhorst, and Bryce A. Muter, all of Troy, Ohio, assignors to Hobart Brothers Company, Troy, Ohio

Filed Apr. 19, 1972, Ser. No. 245,530

Int. Cl. B23k *9/10*

U.S. Cl. 219—131 R **3 Claims**

An improved welding power supply includes saturable reactor means in its output to control welding current. A pulse generator is used to control the firing of SCRs which in turn control the average current in the control winding of the reactor and thus the welding current. A unique current sensing circuit provides a feedback voltage to the pulse generator and monitors alternating current, direct current and direct current-reverse polarity welding current without mechanical switching means. The pulse generator is provided with a secondary control circuit which may be used for a limited time to provide higher initial currents to aid in the establishment of



the arc. A secondary power supply is also provided which may be connected in parallel with the main power supply to provide a relatively high open circuit voltage to heat the electrode and establish the arc.

3,774,008

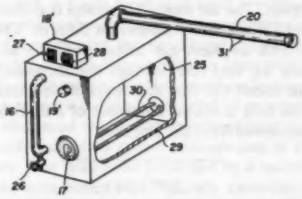
STEAM GENERATING APPARATUS

Thomas Maniscalco, 7-Orian Pl., Glen Cove, N.Y.

Division of Ser. No. 120,449, March 3, 1971, Pat. No. 3,639,725. This application Oct. 22, 1971, Ser. No. 191,793

Int. Cl. F27d *11/02;* **A21b** *1/02*

U.S. Cl. 219—401 **3 Claims**



A portable steam generating unit is adapted for cooperation with a proximate dry heat oven chamber to provide steam for controlled periods of time, and at controlled pressures, principally of use in the preparation of foodstuffs.

3,774,009

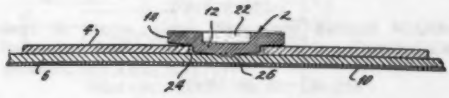
FASTENER FOR SECURING SHEET MATERIAL

Ralph R. Hodges, Belleville, Ill., assignor to Empire Stove Company, Belleville, Ill.

Division of Ser. No. 821,668, May 5, 1969, abandoned. This application July 6, 1970, Ser. No. 60,996

Int. Cl. B23k *9/20, 11/14*

U.S. Cl. 219—98 **4 Claims**



A fastener having a head, a reduced boss on the head, and a small extension or nipple projecting from the boss is employed

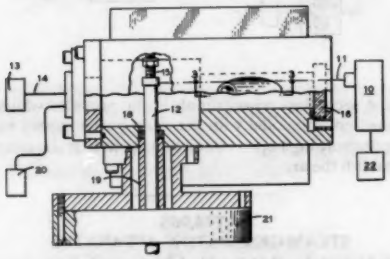
to secure two adjacent metal sheets together. One of the sheets has an aperture, and the boss is passed through this aperture until the small extension engages the other sheet. A capacitor is discharged through the fastener and the second sheet, causing the extension to weld to the second sheet.

3,774,010

PRESSURIZATION OF FUEL RODS BY LASER DRILLING AND SEALING

William Franklin Heer, and Earl Victor DeCarli, both of Lynchburg, Va., assignors to The Babcock & Wilcox Company, New York, N.Y.

Filed Jan. 8, 1971, Ser. No. 104,946
Int. Cl. B23k 9/00
U.S. Cl. 219—121 LM **7 Claims**



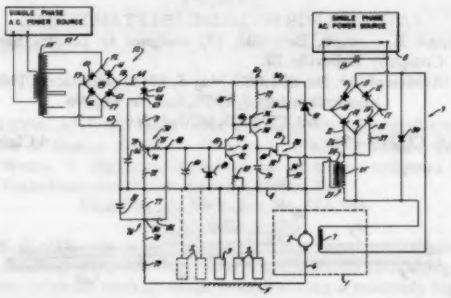
A method of pressurizing a presealed fuel rod containing nuclear fuel with an inert gas under pressure. A loaded fuel rod is inserted into a pressure chamber, the latter is sealed and a vacuum is applied. While maintaining the vacuum in the chamber, the fuel rod is punctured with a fine hole by means of a laser beam. The air inside the vessel is drawn out into the chamber until it reaches equilibrium therein. The chamber is then filled with an inert gas under pressure and this gas is forced inside the fuel rod through the aforesaid hole. When the pressure inside the fuel rod reaches equilibrium with the chamber, the hole is sealed by means of a laser beam and the fuel rod is removed from the chamber.

3,774,011

MULTIPLE ARC DIRECT CURRENT CONSTANT POTENTIAL WELDING GENERATOR

Bernard J. Aldenhoff, Oconomowoc, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Jan. 13, 1971, Ser. No. 106,168
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R **7 Claims**



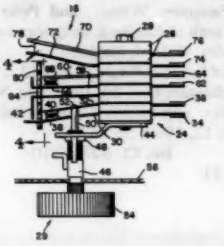
A multiple arc welding generator supplies a presettable direct current constant potential output to a plurality of welding arcs which are individually initiated and terminated. A controlled rectifier bridge includes individual gated rectifiers connected to a pulse source and selectively supplies unidirectional current to the field of the generator from an alternating current supply of the usual 60 cycle supply system. A resistive sensing circuit is parallel connected to the plurality of paralleled arcs and is connnected through a resistive element to supply a linear proportional generator output voltage signal to a signal summing point. A direct current reference source is connected to supply a presettable constant potential reference signal of opposite polarity to the same signal summing point to combine with the proportional generator voltage signal and supply a control signal to the pulse source which maintains the output voltage constant within each electrical cycle of the alternating current input.

3,774,012

ELECTRIC SAFETY SWITCH

John D. Vogel; Carl E. Bochmann, and Albert J. Parrigin, all of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed Nov. 27, 1972, Ser. No. 309,945
Int. Cl. H05b 1/02
U.S. Cl. 219—499 **16 Claims**



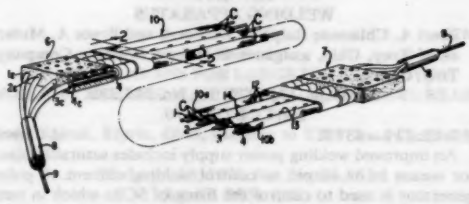
A safety switch for an electric heater in which the heating element forms one arm of a balanced resistance bridge circuit. Electrical power for the element is applied across the bridge circuit through a pair of leads, each having an interrupting set of contacts. A fuse also connected across the bridge circuit is broken by current flowing therethrough when the element is broken or electrically shorted to unbalance the bridge. Breakage of the fuse mechanically releases a spring blade causing it to strike a plate opening both sets of contacts.

3,774,013

HEAT TREATING APPLIANCE FOR STRESS-RELIEVING STEEL PIPING AND LIKE STRUCTURES

Henry Keep, Jr., 314 Elizabeth Ave., Cranford, N.J.

Filed Nov. 13, 1972, Ser. No. 305,919
Int. Cl. H05b 3/58
U.S. Cl. 219—535 **8 Claims**



A heat treating appliance wrappable about welded steel pressure piping and like structures for relieving stresses

therein and coilable to compact form for storage and transport comprises lengths of a pliable electrical heating cable held in parallel relation by and along an elongate flexible reticular support such as a long sleeve knitted of heat-resistant wire, with means on the ends of electrical resistance wires in the cable lengths for connecting them in parallel with a source of electric current. Each cable length preferably comprises a single solid strand of a Cr-Ni alloy resistance wire sheathed within several braided insulating layers of amorphous silica fiber, with an armor layer of heat resistant Ni-Cr alloy wire braided over the insulating sheath. By the use of a suitable number of the heating appliances wrapped about the stressed regions, steel pressure piping ranging from 2 inches to 48 inches in O.D. and from ¼ inch to 5½ inches in wall thickness can be readily subjected to normalizing treatment at an appropriate temperature between about 1,100° and 1,800° and thus relieved of stresses in regions near welded joints thereof.

3,774,014

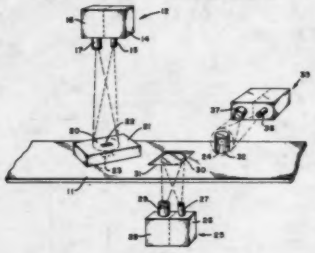
PRINTED CODE SCANNING SYSTEM

Robert M. Berler, Westport, Conn., assignor to Pitney Bowes-Alpex, Inc., Danbury, Conn.

Continuation-in-part of Ser. No. 211,296, Dec. 23, 1971, abandoned. This application Mar. 20, 1972, Ser. No. 236,391

Int. Cl. G06k *7/10;* **E04g** *17/00*

U.S. Cl. 235—61.11 E **22 Claims**



A novel data processing system especially useful at checkout counters is provided that comprises a readout apparatus for sensing a printed code, which is placed on articles of merchandise, e.g. a binary code, which appears as an array of printed lines and spaces. The system includes a camera-type image detecting reader which may be situated at a location remote from the counter on which the merchandise is being conveyed; the camera reader comprises a suitable electronic image scanning device such as a vidicon tube or other image scanning tube which uses similar deflection means. The image scanning reader has a photosensitive area upon which an optical image is focused and functions so that the photosensitive area is scanned with a raster type sweep pattern which rotates continuously to provide electrical sampling of the optical image. Orientation means is incorporated within the reader so that regardless of the orientation of the label with the printed code to be read, the raster type sweep pattern will align itself with the coded strip to provide the desired readout. Each line of the raster represents a potential reading scan in the field into which the printed code to be read is positioned; when the rotation of the raster coincides with an entire traverse of all the bits of the printed code to be read, a readout is registered. The image scanning tube senses the variations in light intensity caused by the image of the coded marks falling on the photosensitive area as the array of marks is scanned by the raster type sweep pattern; these variations produce an electrical signal representative of the printed code. Command signals and logic circuits determine the character of the encoded digits under observation through the reader which, in addition to the image scanning tube, preferably includes a source of illumination whose light projection coincides with the field of view at the label scanning zone.

3,774,015

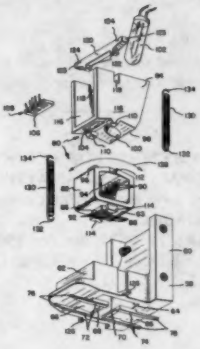
OPTICAL READER FOR AN EMBOSSED CARD

Joseph Larue Lockard, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 144,503, May 18, 1971, Pat. No. 3,706,874. This application July 7, 1972, Ser. No. 269,629

Int. Cl. G02b *5/14;* **G06k** *7/10*

U.S. Cl. 235—61.11 E **15 Claims**



In a reader for serially reading an array of embossments of an embossed card, a single fixed read head is utilized. Driving wheels engage the embossed card and transport the embossments thereof serially past the read head. The read head includes a plurality of optical transmission lines which are purposely selectively shuttered by the raised embossments. Thus a light signal transmitted through the optical transmission lines is selectively shuttered to provide an intermittent optical code identifying each individual raised embossment of the serially arranged array. The read head is carried by a movable arm in the reader, the arm being automatically movable to initially align the reader with respect to the serial array of embossments, thereby providing an aligning feature which allows the read head to be automatically adjustable for alignment with variations in embossment array locations on different embossed cards. In addition, the read head is movably mounted with respect to the arm allowing automatic adjustment of the read head for alignment with an individual embossment which may be misaligned in the serial array. The read head is provided with structure which positively biases the read head into positive engagement on the inclined surfaces of each individual embossment, but which is yieldable to allow movement of the read head to engage and to conform with the irregularities in height and in inclination of each individual embossment.

3,774,016

CONTROL OF PROCESS ACCORDING TO REGISTRATION INDICIA ON MATERIAL BEING PROCESSED

Robert B. Sterns, Great Neck, and Richard McGuire, Smithtown, both of N.Y., assignors to Sun Chemical Corporation, New York, N.Y.

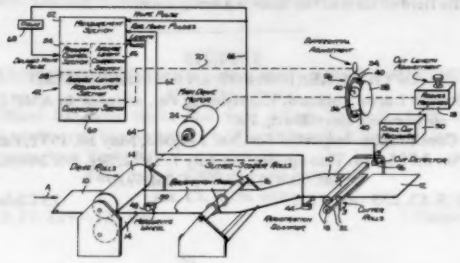
Filed Oct. 4, 1971, Ser. No. 186,234

Int. Cl. G06f *15/46;* **B65n** *23/18*

U.S. Cl. 235—151.1 **21 Claims**

A web cut off device is controlled to produce cuts in accordance with registration marks on the web by measuring the

deviation of each cut from its associated registration mark, inserting a first correction corresponding to this deviation and



superimposing a second correction based upon the statistical processing of a number of preceeding deviation signals.

3,774,017

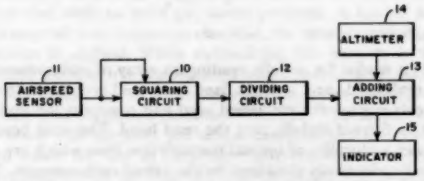
APPARATUS AND METHOD FOR ACHIEVING OPTIMUM PERFORMANCE OF AN AIRPLANE

Nelson R. Zagalsky, New Hope, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 21, 1971, Ser. No. 191,222

Int. Cl. G06g *7/78*; **G01c** *21/20*

U.S. Cl. 235—150.2 **4 Claims**



Apparatus for providing a pilot of an airplane with an indication of the specific energy of the airplane and a method for operating an airplane at an optimum level of performance by the application of the apparatus.

3,774,018

MULTI-RANGE SIGNAL INTEGRATOR WHICH CHANGES RANGE ONLY AT SPECIFIC TIMES

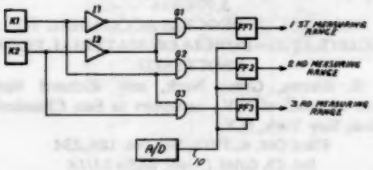
Ernst Spreitzhofer, Nussdorf, Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Ueberlingen/Bodensee, Germany

Filed Dec. 8, 1971, Ser. No. 205,797

Claims priority, application Germany, Dec. 10, 1970, P 20 60 786.7

Int. Cl. G06g *7/18*

U.S. Cl. 235—183 **3 Claims**



A known multirange integrator includes a multistep voltage divider (e.g., 1, 1/10, 1/100) for the input signal, an analog-to-digital converter for generating counting pulses at a frequency proportional to the (divided) input voltage, a final counter for these pulses, and a multistep switching arrangement for effectively multiplying the "weighting" of the pulses by a factor (e.g., 1, 10, 100) to counteract the effect of the input voltage divider (as by supplying the pulses to different stages of a, say, decade counter). The analog-to-digital converter may be a resettable integrator which supplies a counting pulse when its output reaches a preset value, the integrator being simultaneously reset by supplying a reset signal (of standardized voltage and time) to its input. The improvement insures that range switching (of the input divider and output "weighting" switching arrangement) does not occur during the production of a counting pulse by the resettable integrator, which would cause the input signal to be (at least in part) integrated as divided by one factor and the resulting pulse later counted at a different weighting factor. In particular, although the range chosen is dependent on the amplitude of the input signal, actual switching to a new range occurs only when a counting pulse is generated, thereby occurring during the integration reset interval. This switching may be caused by flip-flops setting each range, which flip-flops are enabled by a logic circuit and limit switches reading the input level, but which actually change state only upon occurrence of a counting pulse.

3,774,019

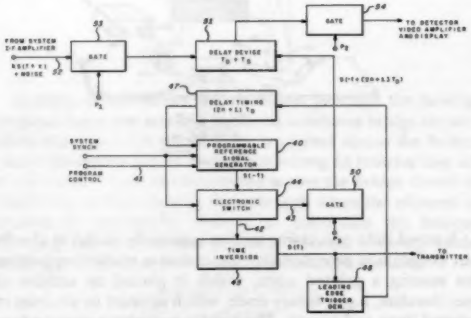
CORRELATION SYSTEM WITH RECIRCULATING REFERENCE SIGNAL FOR INCREASING TOTAL CORRELATION DELAY

Charles E. Cook, Carlisle, Mass., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,898

Int. Cl. G06g *7/19*

U.S. Cl. 235—181 **9 Claims**



A correlation system includes a delay line correlator comprising two tapped delay lines where an input signal and a reference signal are applied to the lines, respectively, such that the signals scan past each other at a relative velocity with respect to each other for obtaining the correlation function therebetween. Means are included in the system for repetitively inserting the reference signal into the correlator for increasing the total correlation delay time thereof.

3,774,020

FLASH BULB UNIT

Andreas Maria Heeman; Folkert Abels, and Arie Wilhelm Kraan, all of Emmansingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 2, 1971, Ser. No. 194,959

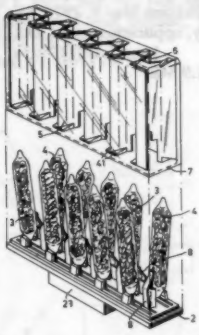
Claims priority, application Netherlands, Nov. 6, 1970, 7016259

Int. Cl. G03b *15/02*

U.S. Cl. 240—1.3 **4 Claims**

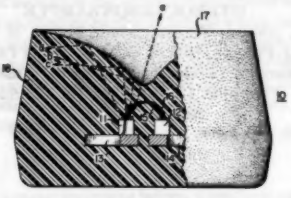
A flash bulb unit which comprises at least two rows of needle-shaped combustion flash bulbs arranged in parallel on a

common support, in the proximity of which bulbs reflector systems are arranged, the direction of reflection of the reflectors of the bulbs of one row being directed opposite to that of



the reflectors of the bulbs of the other row. The flash bulb unit has fusing strips which electrically connect each bulb to the flash circuit for firing the lamps in sequence.

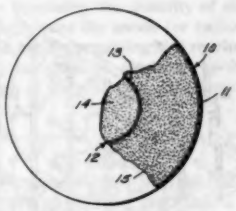
3,774,021
LIGHT EMITTING DEVICE
Bertrand Harold Johnson, Murray Hill, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.
Filed May 25, 1972, Ser. No. 256,800
Int. Cl. G01d *11/28*
U.S. Cl. 240—2.1 **7 Claims**



A light emitting diode module with a dome encapsulant in which the geometry is designed to maximize the light output in the plane of the junction. The module is adapted to couple light into a planar light guide, such as a telephone dial faceplate, so that discrete remote regions of the faceplate can be illuminated. The objective generally is to illuminate several such regions with a lesser number of light emitting elements.

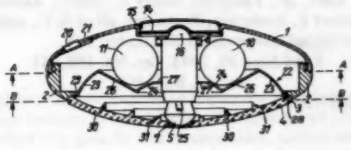
3,774,022
PACKAGED CHEMILUMINESCENT MATERIAL
Bernard Dubrow, Torrance, and Eugene Daniel Guth, Palos Verdes Peninsula, both of Calif., assignors to TRW, Inc., Cleveland, Ohio
Filed June 30, 1965, Ser. No. 468,231
Int. Cl. F21v *9/16*
U.S. Cl. 240—2.25 **12 Claims**

This invention relates to a packaged luminescent material, and more particularly to a combined package of a chemiluminescent agent as the "fuel," and an activating agent therefor, wherein the fuel and activating agent are maintained in close association but separated from each other by a barrier medium to prevent interaction before the same is desired. When the barrier medium is ruptured, or otherwise broken down, either deliberately or unintentionally, a reaction occurs



between the chemiluminescent agent and the activating agent with the emission of visible light, without, however, the generation of any appreciable amount of heat.

3,774,023
FLASHLIGHT
Claus Christian Cobarg, Steinbach, and Reinhard Napierski, Oberursel, both of Germany, assignors to Braun Aktiengesellschaft, Frankfurt/Main, Germany
Continuation of Ser. No. 8,161, Jan. 15, 1970, abandoned.
This application June 28, 1972, Ser. No. 267,115
Int. Cl. F21l *7/00*
U.S. Cl. 240—10.6 R **15 Claims**

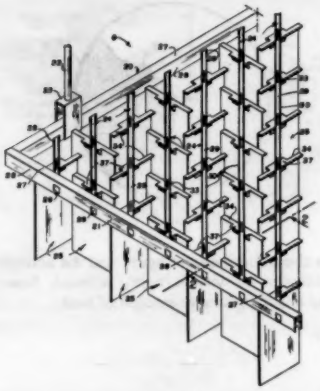


A pocket size flashlight comprising a reflector having at least a pair of effective reflecting regions each having a different focal length but a common focal point, a light source placed in the focal point, the reflecting regions each forming a parabolic mirror, the reflector also including non-reflecting regions, additional reflectors having a focal point and being disposed to eliminate the non-reflecting effect.

3,774,024
ILLUMINATOR GRID
Charles U. Deaton, Genessee Mountain, Golden, Colo.
Filed Dec. 20, 1971, Ser. No. 209,524
Int. Cl. F21v *11/00*
U.S. Cl. 240—78 LD **14 Claims**

A series of parallel, equally spaced channels support a series of depending baffles below a light or series of lights. The baffles are spaced equally along the respective channels and have a width less than their own spacing but greater than the distance between supports to provide an overlap of the edges of adjacent light intersecting baffles, when turned angularly, such as 45°, to the channels and in alternating angular positions on adjacent channels. The baffles are held in the angular positions by clips cooperating with spaced slots in the chan-

nels and centrally disposed holes in a right angled portion of the respective baffles. These holes are slanted, rectangular or



octagonally pointed. When turned in alignment with the channels to form rows, the baffles are readily cleaned.

3,774,025

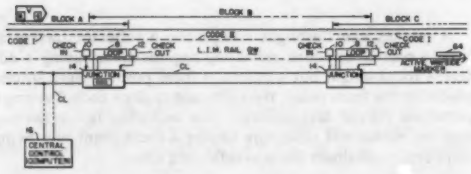
VEHICLE CONTROL SYSTEM

John H. Auer, Jr., Fairport; Henry C. Sibley, Adams Basin, and Robert F. Anderson, Rochester, all of N.Y., assignors to General Signal Corporation, Rochester, N.Y.

Filed June 30, 1971, Ser. No. 158,341

Int. Cl. B61l *3/12*

U.S. Cl. 246—363 **8 Claims**



The control system governs the operation of a vehicle along the right-of-way which is divided into a plurality of zones and has control means for governing safe operation of the vehicles in accordance with traffic conditions. The improvement comprises means on the vehicle for demarcating the ends thereof and wayside located check-in means at entering boundaries of each zone responsive to the passage of the front end of the vehicle which provides the check-in signal. Wayside located check-out means beyond the check-in means at exit boundaries of each zone providing an overlap zone between zone boundaries, and is responsive to the passage of the rear end of the vehicle. The check-in marker provides the check-out signal while clearing the previous zone only provided the check-in signal is received. A speed selector is located in the overlap zone enabled by the check-in signal for communicating a selected speed limit to the vehicle only within each of said overlap zones.

3,774,026

ION-OPTICAL SYSTEM FOR MASS SEPARATION

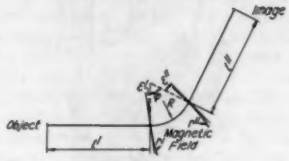
Itzhak Chavet, Rehovoth, Israel, assignor to The State of Israel, Atomic Energy Commission, Tel Aviv, Israel

Continuation of Ser. No. 79,828, Oct. 12, 1970, abandoned. This application May 9, 1972, Ser. No. 251,820

Claims priority, application Israel, Oct. 17, 1969, 33204

Int. Cl. H01j *39/34*

U.S. Cl. 250—41.9 ME **4 Claims**



An ion optical system for use with a magnetic prism with a gap of width g and having an ion beam which is arranged to emerge from an elongated object slit and whose maximum angular dispersion $\Delta\beta_{max}$ is smaller than g/l' where l' is the distance between the object slit and the effective entry boundary of the magnetic field associated with the magnetic prism, the system comprising means for causing the ion beam to converge in the vertical plane, so as to focus axially substantially into a line located substantially at the effective entry boundary of the magnetic field associated with the magnetic prism.

3,774,027

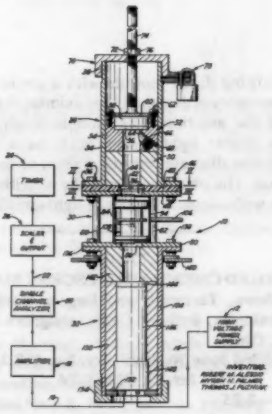
ANALYZER FOR THIRD ELEMENTS IN A HYDROCARBON SAMPLE

Robert M. Alessio, Westmoreland; Myron N. Palmer, and Thomas J. Puzniak, both of Allegheny, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Mar. 12, 1971, Ser. No. 123,524

Int. Cl. G01t *1/16*

U.S. Cl. 250—43.5 MR **14 Claims**



A laboratory type of analyzer for quantitatively determining the percent third element content of a hydrocarbon sample. A unique rhodium/americium radioactive source is disclosed.

3,774,028

ION BEAM INTENSITY MEASURING APPARATUS

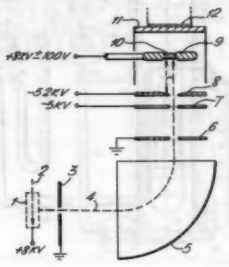
Norman Richard Daly, Reading, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed June 1, 1971, Ser. No. 148,346

Claims priority, application Great Britain, June 9, 1970, 28,001/70; Nov. 26, 1970, 56,327/70

Int. Cl. H01j *39/34*

U.S. Cl. 250—41.9 D 7 Claims



In a known energy-selective ion measuring apparatus, mainly for mass spectrometers, the ions pass through an apertured electrode towards an electrode to which a variable retarding voltage is applied. The centre of the latter electrode is occupied by a scintillator beyond which is located a photomultiplier. When the retarding voltage equals or exceeds the ion source voltage, all ions are repelled to the apertured electrode to produce secondary electrons which are accelerated to the scintillator to produce an output. When the retarding voltage is less than the source voltage, only ions of lesser energy, such as metastable fragments, are so repelled.

In the present invention the aforesaid apertured electrode, instead of being earthed or earthy, is held at a high voltage opposite in sign to that of the retarding voltage, which increases the sensitivity. Optionally a transverse field is provided by an assymetrical projection of the apertured electrode, in order to prevent ions being repelled through the aperture, thereby further increasing the sensitivity.

3,774,029

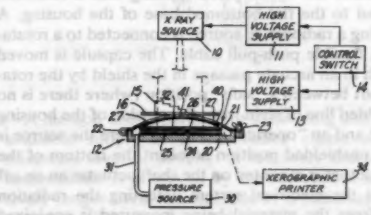
RADIOGRAPHIC SYSTEM WITH XEROGRAPHIC PRINTING

Eric P. Muntz, Pasadena; Andrew P. Proudian, Chatsworth, and Paul B. Scott, Topanga, all of Calif., assignors to Xonics, Inc., Van Nuys, Calif.

Continuation-in-part of Ser. No. 217,394, Jan. 12, 1972, abandoned, which is a continuation-in-part of Ser. No. 143,984, May 17, 1971, abandoned. This application June 12, 1972, Ser. No. 261,927

Int. Cl. G03b *41/16*

U.S. Cl. 315—321 22 Claims



A system for making X-ray pictures by producing an electrostatic image on a dielectric sheet suitable for development by powder xerographic techniques. A pair of electrodes with a gas filled gap therebetween, with the dielectric sheet positioned at the anode or cathode and with the X rays directed past the object to the gas for producing electrons in the gap. An arrangement for increasing the quantity of electrons (or positive ions) moving toward the anode (or cathode) normal to the dielectric sheet and for providing high resolution images by enhancing the production of electrons in the gap and moderating the energy of the electrons, with superatmospheric high Z gas in the gap.

3,774,030

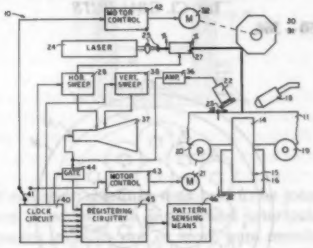
DEFECT DETECTING AND INDICATING MEANS FOR NON-DESTRUCTIVE TESTING

Donald T. O'Connor, Barrington; Bruce C. Graham, Arlington Heights, and David W. Prine, Maywood, all of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Continuation of Ser. No. 27,741, April 13, 1970, abandoned. This application June 2, 1972, Ser. No. 259,342

Int. Cl. G01n *21/16*

U.S. Cl. 302—363 4 Claims



Defect detecting and indicating means for magnetic particle or penetrant systems in which defect indications are produced on the surface of a part. In one arrangement, radiant energy is impinged uniformly on a substantial area of the part which may be viewed while in another, the surface is scanned by a small flying spot of radiant energy, detector means being responsive to energy reflected back from the surface. In both arrangements a source of coherent radiation is used, preferably a laser, a fluorescent material is associated with the magnetic particles or the penetrant which absorbs energy at the wavelength of the radiation and emits in a different spectral range. A filter which rejects at the wavelength of the radiation may be used in front of the detector or for direct viewing. In the flying spot arrangement, signals developed may be applied to a television monitor and/or to a digital registering and pattern recognition system operative to develop an indication independent of defect position.

3,774,031

GAMMA CAMERA WITH INCREASED RESOLUTION

John Rowland Mallard, Aberdeen, Scotland, and Robin John Wilks, Little Chalfont, England, assignors to National Research Development Corporation, London, England

Filed Aug. 1, 1969, Ser. No. 846,701

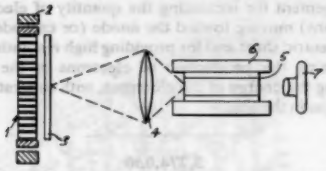
Claims priority, application Great Britain, Aug. 5, 1968, 37,346/68

Int. Cl. G01t *1/20*

U.S. Cl. 250—503 9 Claims

Apparatus for use in investigating the distribution of radiation from an extended source consists of a multi-channel collimator which is so mounted as to be movable in a plane substantially at right angles to the axis of collimation. A gamma camera is described which consists of such a collimator for

collimating gamma radiation in association with a scintillation screen, an image intensifier vacuum tube, and means for forming an image of the distribution of light emitted by the scintillation screen upon the photo-cathode of the image intensifier.



3,774,032

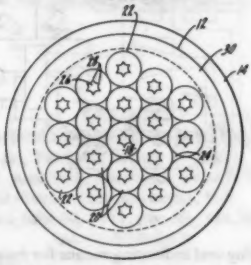
ATTENUATED LIGHT COUPLING BETWEEN SCINTILLATOR AND PHOTOMULTIPLIER

Kai Lange, Copenhagen, Denmark, assignor to Nuclear Data (Ireland) Limited, Cork, Ireland

Filed Oct. 22, 1971, Ser. No. 191,891

Int. Cl. G01j *39/18*

U.S. Cl. 250—366 **8 Claims**



A radiation image device having a scintillator, a plurality of photomultiplier tubes positioned to receive light from the scintillator and a light conductor between the scintillator and the photomultiplier tubes. Dimming means are positioned between the scintillator and photomultiplier tubes.

3,774,033

DUAL SPACED EPITHERMAL NEUTRON DETECTOR POROSITY LOGGING

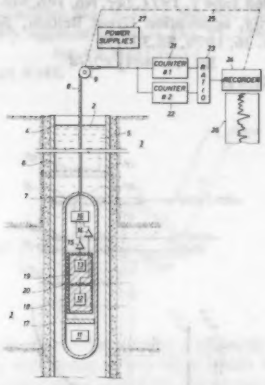
Hubert D. Scott, Houston, and Michael P. Smith, Bellaire, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 17, 1972, Ser. No. 254,282

Int. Cl. G01t *3/00*

U.S. Cl. 250—266 **9 Claims**

An illustrative embodiment of the invention includes method and apparatus for making earth formation porosity measurements in open or cased well boreholes. A high intensity (1.69×10^9 neutrons/sec.) californium 252 neutron source is used to irradiate earth formations surrounding a well borehole with high energy neutrons. As the high energy neutrons interact with the materials comprising the earth formation their energy is reduced and some having epithermal energy are deflected back into the borehole at spaced distances from the neutron source. Two epithermal energy neutron detectors spaced at different vertical distances from the neutron source and from each other are used to measure the epithermal neutron population at the different distances. The ratio of the counting rates in the two detectors may be interpreted in terms of earth formation porosity by means of a predetermined relationship.



3,774,034

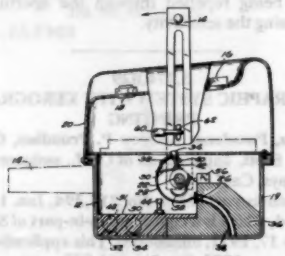
PORTABLE NUCLEAR DENSITY-MOISTURE INSTRUMENT

John R. Martin, Glendale, Wis., assignor to Soiltest, Inc., Evanston, Ill.

Filed May 12, 1971, Ser. No. 142,450

Int. Cl. G21h *1/00*

U.S. Cl. 250—388 **7 Claims**



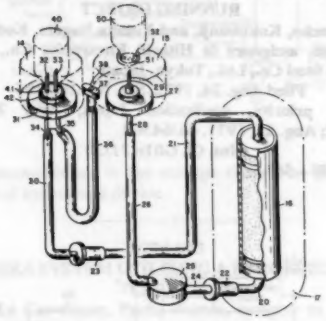
The instrument has a two-piece housing and a radiation shield mounted to the flat-bottomed base of the housing. A capsule carrying a radioactive source is connected to a rotatable shaft by a flexible push-pull cable. The capsule is moved back and forth in an arcuate passage in the shield by the rotation of the shaft between a "safe" position (where there is no direct, unshielded line of sight from the outside of the housing to the source) and an "operate" position (where the source is located in an unshielded position adjacent the bottom of the housing). An actuator mounted on the shaft actuates an on-off switch so that the electrical system detecting the radiation back-scatter from the material being measured is energized only when the source is in the "operate" position. The shaft is rotated by a handle, which is also used to carry the instrument, and the source is in the "safe" position when the handle is in the carrying position.

3,774,035

METHOD AND SYSTEM FOR GENERATING AND COLLECTING A RADIONUCLIDE ELUATE

Gerald J. Litt, Wellesley, Mass., assignor to New England Nuclear Corporation, Boston, Mass.

Filed July 12, 1971, Ser. No. 161,761
Int. Cl. G21h 5/02
U.S. Cl. 250—106 T 12 Claims



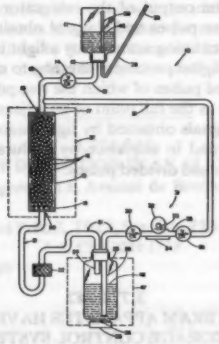
A method and system for filling a vial with an eluate containing a radionuclide by coupling a vial containing a prepackaged amount of eluant to both an inlet to a radionuclide generator column and a vent outlet and coupling an evacuated vial to an outlet from the radionuclide column. The method and system may utilize a filter which includes an eluate repellent portion.

3,774,036

GENERATION OF A SUPPLY OF RADIONUCLIDE

James M. Gerhart, Walnut Creek, Calif., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 195,734, Nov. 4, 1971. This application Feb. 23, 1972, Ser. No. 228,613
Int. Cl. G21h 5/00
U.S. Cl. 252—301.1 R 18 Claims



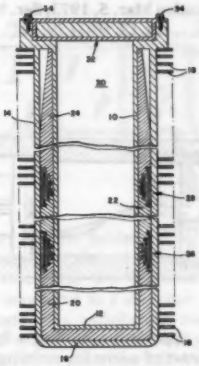
A method and apparatus for generating and maintaining an available supply of a radioactive eluate with at least a minimum level of activity. A relatively short-lived daughter radionuclide is produced by the radioactive decay of a relatively longer-lived radionuclide in a radionuclide generating chamber. The daughter radionuclide is separated from the parent radionuclide by use of an eluting solution. The resultant solution is recycled through the generator chamber to replenish and concentrate the amount of daughter radionuclide contained therein. Because a relatively large amount of eluate is produced and maintained at at least a minimum level of radioactivity, it is possible to easily meet fluctuating demands for the daughter radionuclide.

3,774,037

RADIATION SHIELDING MEANS JOINT

Harold A. Backus, Wynnwood, Pa., assignor to NL Industries, Inc., New York, N.Y.

Filed May 24, 1971, Ser. No. 146,399
Int. Cl. G21f 3/00
U.S. Cl. 250—506 17 Claims



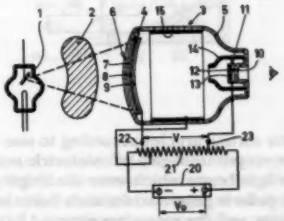
A pair of radiation shielding members to be joined include end portions provided with mechanical interlock portions. The joint means includes one or more joint members having cooperating mechanical interlock portions in the form of peripherally extending ribs and grooves for mechanically interlocking the pairs of shielding members with one another. The joint members are arcuate even when the radiation shielding members are not of circular cross-sectional configuration, as for example when the radiation shielding members define a plurality of apexes.

3,774,038

IMAGING DEVICE COMPRISING AN IMAGE-INTENSIFYING TUBE

Martinus Adrianus Cornelis Ligtenberg, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,693
Claims priority, application Netherlands, Apr. 16, 1971, 7105196
Int. Cl. H01j 1/62, 31/50, 39/00
U.S. Cl. 250—213 VT 22 Claims



The luminescent screen collecting the photo-electrons of an imaging device is provided with a cover layer that decelerates

the electrons so that luminescence occurs only if the photoelectrons have been accelerated to at least a quarter and preferably at least one half of the value of the nominal operating voltage thereby increasing the control range of the permissible intensity variations within the acceptable image definition limits of the device.

3,774,039

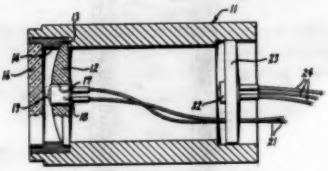
PHOTOELECTRIC APPARATUS FOR DETECTING LIGHT REFLECTED FROM AN OBJECT

Earl T. Price, San Jose, Calif., assignor to Scientific Technology Incorporated, Mountain View, Calif.

Continuation of Ser. No. 195,330, Nov. 3, 1971, abandoned. This application Mar. 5, 1973, Ser. No. 338,179

Int. Cl. H01j *39/12*

U.S. Cl. 250—552 **3 Claims**



A photoelectric apparatus including a light emitting diode mounted at the center of a lens for emitting light with the lens serving to focus emitted light reflected from objects upon a photodetector axially disposed behind the diode, and an electrical system for cyclically energizing said light emitting diode at a predetermined frequency and amplifier means tuned to said frequency and applying its amplified output signal to a circuit which develops a control signal when the input signal exceeds a predetermined adjustable value.

3,774,040

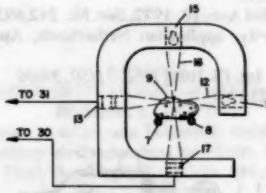
PHOTOELECTRIC SYSTEM FOR GRADING OBJECTS ACCORDING TO SIZE

Stephen P. Stephanos, Oakland, Calif., assignor to George E. Lauer, Oakland, Calif.

Filed May 10, 1972, Ser. No. 252,016

Int. Cl. G06b *7/00*

U.S. Cl. 250—560 **10 Claims**



A device for sorting articles according to size in which the articles are conveyed through a photoelectric sensor. An article interrupts light beams which sense the length and width of the article. A pulse is generated for each linear increment the article advances, and the pulses are summed by digital counters while the length-sensing beam is interrupted. If the count has reached a predetermined range when the article passes out of the length-sensing beam, the article is of the desired length. If the width-sensing beam is interrupted, indicating the article is also greater in width than a predetermined minimum, the article is the desired size, and is ejected into an article collecting device.

3,774,041

AUTOMATIC INSPECTOR OF THE SURFACE OF RUNNING OBJECT

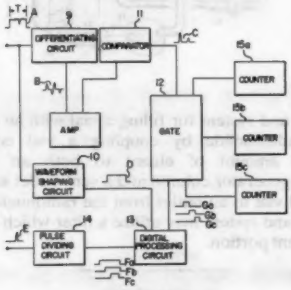
Akira Kaneko, Kokubunji, and Yutaka Nagata, Kodaira, both of Japan, assignors to Hitachi Electronics Co., Ltd. and Nisshin Steel Co., Ltd., Tokyo, Japan

Filed Aug. 24, 1972, Ser. No. 283,295

Claims priority, application Japan, Aug. 25, 1971, 46/64362; Aug. 25, 1971, 46/64363

Int. Cl. G01n *21/30*

U.S. Cl. 250—563 **2 Claims**



An apparatus for detecting defects in the surface of a running sheet material by continually scanning it in the transverse direction; wherein the running speed of the sheet object is detected, the amount of electricity proportional to the running speed is integrated by an integrator over the period of time for which the surface of the running sheet object is scanned by the light beam, the output of the integrator is converted into a plurality of pulses with different rise points by a comparator circuit including a plurality of comparator units for comparing the output of the integrator with a predetermined level, these pulses and a signal obtained as a result of the running object being scanned by a light beam are digitally processed by a digital processor thereby to convert them into a group of divided pulses of which the rise point of one occurs at the same time as the fall point of an adjacent pulse, and defect detection signals obtained by light-beam scanning of the object are recorded in sequence by a plurality of recorders corresponding to said divided pulses.

3,774,042

PARTICLE BEAM APPARATUS HAVING A DATA STORAGE CONTROL SYSTEM

Albrecht Engel, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Continuation of Ser. No. 30,908, April 22, 1970, abandoned. This application Jan. 3, 1972, Ser. No. 215,074

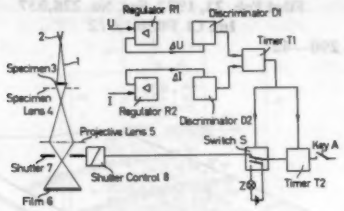
Claims priority, application Germany, May 16, 1969, P 19 25 330.6

Int. Cl. H01j *37/26*; **G01n** *23/04*

U.S. Cl. 250—311 **7 Claims**

A discriminator coupled to the storage control of a storage device for storing data provided by a particle optical system determines inconstancies in operational magnitudes of the

particle beam apparatus which adversely affect the quality of the data stored by the storage device and transmits the incon-



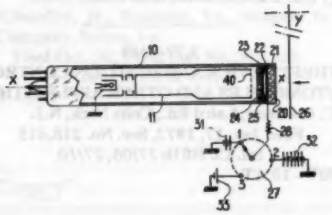
stancy determinations to the storage control to prevent the operation of the storage device.

3,774,043

CAMERA SYSTEM UTILISING A PYROELECTRIC TARGET

Francois Le Carvennec, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Apr. 12, 1972, Ser. No. 243,210
Claims priority, application France, May 14, 1971, 7117556
Int. Cl. G01j 1/02
U.S. Cl. 250—330 **5 Claims**



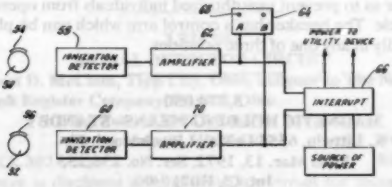
In camera systems utilising pyroelectric targets periodically masked to the incident radiation by means of a shutter and alternately scanned with a slow read-out electron beam and a fast electron beam, the invention adds an element for ensuring a second slow electron scanning after the end of the fast electron scanning and up to the commencement of that phase of the shutter cycle during which the slow read-out electron scanning takes place.

3,774,044

METHOD OF DETECTION IN AN ALARM SYSTEM

Roger Jules Langeron, 12, Avenue de Bretteville, Neuilly-sur-Seine, France

Filed Feb. 3, 1972, Ser. No. 223,073
Int. Cl. G01t 1/18
U.S. Cl. 250—389 **3 Claims**



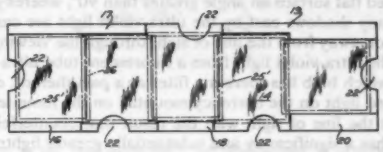
An improved ionization detection method and apparatus is described wherein a material which is adapted to emit a vapor, aerosol or fumes at a predetermined elevated temperature is deposited on a body whose temperature is to be monitored. Means including an ionization detector are provided for sensing the emission and for indicating the existence of the predetermined body temperature.

3,774,045

CART TOP X-RAY CASSETTE HOLDER

Raymond H. Trott, White Oaks, Hope, R.I.

Continuation-in-part of Ser. No. 116,391, Feb. 18, 1971, abandoned. This application Sept. 28, 1972, Ser. No. 292,936
Int. Cl. G03b 41/16
U.S. Cl. 250—444 **2 Claims**



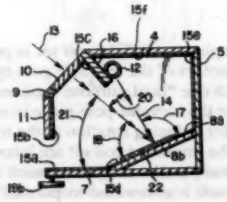
A cart top X-ray cassette holder having an elongated and substantially rectangularly shaped frame. The frame is of a length of little greater than the height of an average adult human being and may serve as a stretcher. Its top is substantially flat and made of a radiolucent material. Positioned beneath in close proximity and substantially parallel thereto is a bottom wall member. A plurality of film receiving compartments are formed within the frame by guide members attached to the top and bottom wall members with the mouths of said film receiving compartments being formed by the vertical open spaces around the periphery of the frame between the guides or side wall members. The frame is designed to have the open mouth of adjacent film receiving compartment formed along different peripheral sides and to have each adjacent film receiving compartment overlap each other along at least one edge where substantially the entire top of the frame can be employed for the taking of X-rays of a human being positioned thereon.

3,774,046

COUNTERFEIT CURRENCY DETECTOR

George E. Hoch, 31-28 Eventerry Dr., Oceanside, N.Y., and Wilbert H. Hirsch, 3099 Monterey Dr., Merrick, N.Y.

Filed June 5, 1972, Ser. No. 259,376
Int. Cl. G01d 7/06
U.S. Cl. 250—485 **6 Claims**



A detector of counterfeit paper currency as opposed to genuine United States currency of any denomination, which includes a box-like enclosure having a small viewing window, having a port for insertion thereinto of the currency, and having a supporting surface therein in the line of sight of the viewing window positioned such to support currency inserted thereinto with a side thereof facing about the line of sight, with a fluorescent ultra-violet light mounted within the enclosure

above the line of sight with a protective baffle blocking direct ultra-violet light from the line of sight and the ultra-violet fluorescent bulb being positioned such that light striking the mounting surface at the location at which the currency to be examined would be viewable passing rays to that point in as nearly parallel relationship as possible relative to the line of sight in order to avoid shadows — i.e., in order to avoid portions of the currency being viewable in the line of sight devoid of reflected ultra-violet light, and similarly to reduce the possibility of shadows from the ultra-violet light, the mounting surface being angled away from the line of sight to an extent preferably such that for a flat mounting surface away from the line of sight beyond the line of light to the mounting point where there is defined between the line of light and the removed flat surface an angle greater than 90°, whereby at all times any shadows cast by the ultra-violet light are cast in a direction away from the line of sight through the viewing window, the ultra-violet light from a fluorescent tube ultra-violet bulb, which bulb has therein a filter as a part thereof, casts a reflected light on the currency mounted on the mounted surface in the line of sight with the result that counterfeit currency has a significantly and substantially greater lightness in shade and reflectiveness than genuine U.S. paper currency.

3,774,047

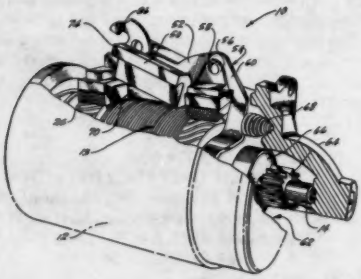
SHUNTLESS REPLACEMENT COIL SET FOR AUTOMOBILE STARTER MOTORS

Henry P. Erwin, Jr., Pasadena, Calif., assignor to Precision Field Coil Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 253,396, May 15, 1972, and a continuation-in-part of Ser. No. 127,928, March 28, 1971, Pat. No. 3,708,682. This application Nov. 29, 1972, Ser. No. 310,278

Int. Cl. F02n *11/00*

U.S. Cl. 290—38 R **5 Claims**



An improved replacement field coil set is provided for automobile starter motors of the movable pole type having four field coils for which one "dual-purpose" coil serves as a pull-in and hold-in coil for the movable pole-piece in addition to serving as a field coil for inducing rotation of the motor armature. The four coils of the improved coil set are interconnected in a one-and-three series-parallel relation to each other in which the dual-purpose coil is connected in parallel with the three remaining field coils, which in turn are interconnected with each other in series. The dual-purpose coil comprises a single winding formed by a single conductor of predetermined turns and dimensions so selected that the coil pulls the movable pole-piece into the center of the coil during current flow through all coils and holds the movable pole-piece in its pulled-in position without chatter of the movable pole-piece during no-load operating conditions of the motor. The coils are electrically connected between the battery and the armature in a shuntless circuit so that electric current flows through all coils to the armature when the movable pole-piece is pulled in and held in by the dual-purpose coil.

3,774,048

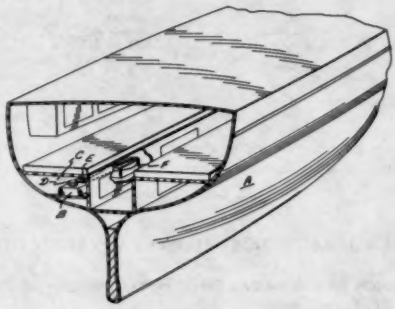
ENERGY GENERATING AND STORING ASSEMBLY FOR MARINE STRUCTURE

Derek D. Hardingham, 1030 Crest View Dr., Seal Beach, Calif.

Filed Feb. 22, 1972, Ser. No. 228,037

Int. Cl. F03b *13/12*

U.S. Cl. 290—42 **13 Claims**



A device and method of using same for transforming the pitch and roll motion of a buoyant marine structure into storable energy that is available for future use.

3,774,049

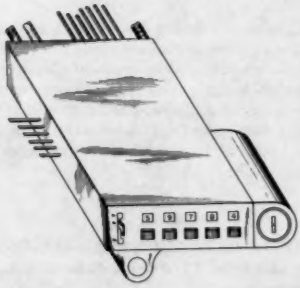
ANTITHEFT DEVICE AND IGNITION CONTROL FOR AUTOMOBILES AND OTHER APPLICATIONS

Michael C. Coleman, Laird Rd., Colts Neck, N.J.

Filed Jan. 17, 1972, Ser. No. 218,415

Int. Cl. H01h *27/06, 27/10*

U.S. Cl. 307—10 AT **1 Claim**



The electrical circuits of a vehicle are controlled by a circuit breaker, a combination register and an ignition switch in such manner as to prevent unauthorized individuals from operating a vehicle. The breaker has a control arm which can be placed manually in any one of three positions.

3,774,050

MAGNETIC HOLDING MEANS - STANDBY

Arthur K. Littwin, 6555 LeMai, Lincolnwood, Ill.

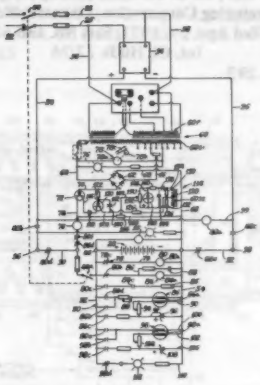
Filed Mar. 13, 1972, Ser. No. 234,253

Int. Cl. H02j *9/00*

U.S. Cl. 307—66 **17 Claims**

Magnetic holding means such as a lift magnet or as used in a chuck for holding a workpiece in place; the magnet is magnetized normally by the usual power source, but in the event

of failure of that source, a standby source, such as a battery, is brought into service; the battery is maintained fully charged



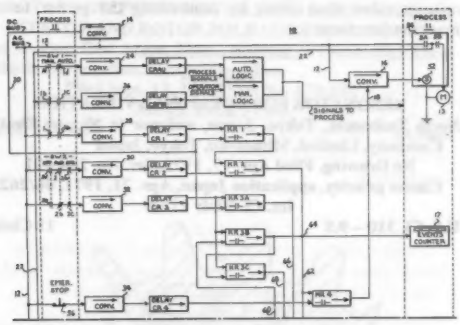
automatically, under control of the state of charge of the battery itself.

3,774,051

SOLID STATE CIRCUITS FOR AND METHOD OF SIMULATING RELAY LOGIC

Robert F. Chandler, Jr., Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Oct. 30, 1972, Ser. No. 302,356
Int. Cl. H03k *19/12*
U.S. Cl. 307—203 **8 Claims**



Logic circuits adapted to be connected in prescribed configurations are provided to form solid-state logic systems whereby the circuits directly replace and simulate relay coils and contacts to systematically generate signals representative of the operation of relays.

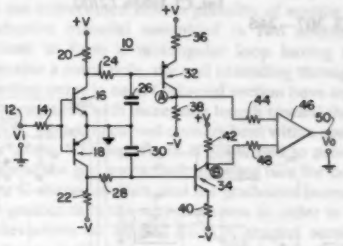
3,774,052

SIGNAL DETECTOR CIRCUIT

Herbert D. McClain, Tipp City, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Feb. 28, 1972, Ser. No. 229,932
Int. Cl. H03k *5/00*
U.S. Cl. 307—238 **9 Claims**

There is disclosed a signal detector circuit for recognizing the presence of a sinusoidal input signal. The circuit includes complementary switching transistors for deenergizing first and second capacitors during respective positive and negative half cycles of the input signal. Further, first and second amplifying means are provided for providing signals which change respectively from positive to negative and negative to positive



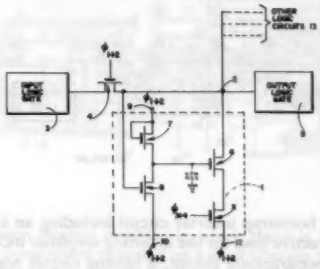
voltages as the two capacitors are discharged. A comparator provides an output signal when the two amplifier signals change polarity with respect to one another.

3,774,053

CLAMPING ARRANGEMENT FOR REDUCING THE EFFECTS OF NOISE IN FIELD EFFECT TRANSISTOR LOGIC CIRCUITS

Robert G. Carlson, Anaheim, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Dec. 17, 1971, Ser. No. 209,464
Int. Cl. H03k *5/08*
U.S. Cl. 307—237 **4 Claims**



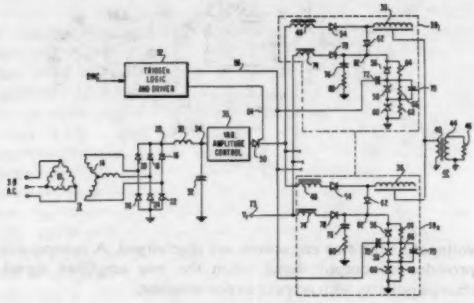
A field effect transistor logic circuit includes two series-connected field effect transistors forming a shunt path connected between an input node on which noise voltage levels may appear and a reference voltage level. Conduction of one transistor is controlled by a recurring clock signal while the other transistor is rendered conductive by precharge circuitry responsive to the logic level of the input voltage at the input node. For an input voltage having a logic level corresponding to the reference voltage level (e.g., electrical ground), both transistors in the shunt path are rendered conductive and any noise on the input node is shunted to the reference voltage level. Overall circuit operation is controlled by two, double-width clock signals having a phase separation therebetween.

3,774,054

VOLTAGE VARIABLE SOLID STATE LINE TYPE MODULATOR

Alfred W. Morse, Baltimore, Md., assignor to Westinghouse Electric Corporation, Gateway Center, Pittsburgh, Pa.

Filed Aug. 9, 1971, Ser. No. 169,980
Int. Cl. H03k *17/00*
U.S. Cl. 307—246 **13 Claims**



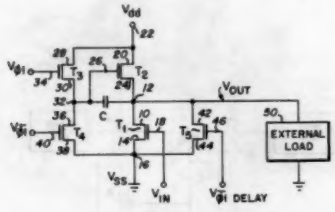
A high power radar line type pulsing modulator having a continuously variable operating voltage while utilizing a constant voltage switch comprised of a plurality of series connected two-terminal, four layer semiconductor devices known as reverse switching rectifiers (RSR).

3,774,055

CLOCKED BOOTSTRAP INVERTER CIRCUIT

Dilip C. Bapat, Mountain View, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 24, 1972, Ser. No. 220,092
Int. Cl. H03k *3/26*
U.S. Cl. 307—279 **5 Claims**



A clocked bootstrap inverter circuit including an inverting amplifier, an active load for the inverting amplifier including a capacitive bootstrapping circuit, a biasing circuit responsive to a first clocking signal and a second clocking signal 180° out of phase with the first clocking signal, and an amplifier disabling device responsive to a third clocking signal which is more than 180° out of phase with the first clocking signal. The biasing circuit alternately activates and inactivates the active load while the disabling device alternately disables the amplifier and provides a small time delay for allowing the bootstrapping circuit to be precharged.

ERRATA

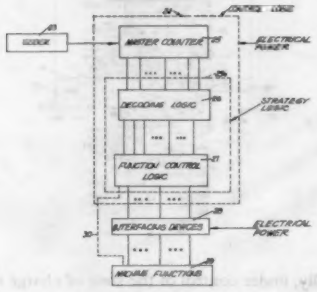
For Classes 307—149 and 307—218 see:
Patents Nos. 3,774,234 and 3,774,235

3,774,056

DIGITAL ELECTRONIC CONTROL CIRCUIT FOR CYCLICALLY OPERABLE APPLIANCES AND THE LIKE

Steven B. Sample; Paul R. Scheuer; Stevan W. Speheger, and Karmen D. Cox, all of Lafayette, Ind., assignors to Design and Manufacturing Corporation, Connersville, Ind.

Filed Apr. 29, 1971, Ser. No. 138,625
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **72 Claims**



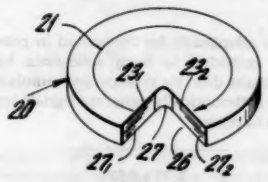
An electronic digital control system for automatic appliances and the like of the type capable of carrying on one or more cycles, each cycle comprising a plurality of sequential operations, each operation in turn comprising a plurality of events in sequence performed by a number of on-off machine devices or functions. The control system comprises a control logic circuit which performs logical operations on inputs from a source of regularly spaced electrical pulses, sensors, and panel switches of the appliance; and generates outputs which, either directly or by means of interfacing devices, activate and deactivate the machine functions in a desired time sequence and/or in accordance with a desired control strategy based on criteria other than time, by controlling the power to the machine functions.

3,774,057

RESONATOR FOR TORSIONAL VIBRATION

Norio Tsubouchi, Tokyo, Japan, assignor to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,401
Claims priority, application Japan, Apr. 21, 1971, 46/26231
Int. Cl. H04r *17/00*
U.S. Cl. 310—9.5 **11 Claims**



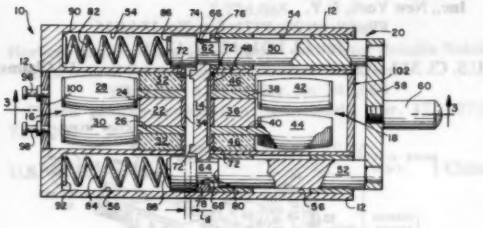
A generally disc-shaped ferroelectric ceramic piece is provided with at least one recess inwardly extending from the peripheral surface and is poled along the azimuthal direction so as to adapt the piece to torsional vibration. A pair of electrodes are attached to the principal surfaces of the piece, respectively. During manufacture, a pair of electrodes for poling the piece are attached to the face of the piece provided by the recess and are removed after poling.

3,774,058

FORCE TRANSDUCER

Martin Louis Abel, Franklin, Mich., assignor to Permawick Company, Inc., Detroit, Mich.

Filed June 30, 1972, Ser. No. 268,081
Int. Cl. H02k *33/00, 35/06*
U.S. Cl. 310—15 16 Claims



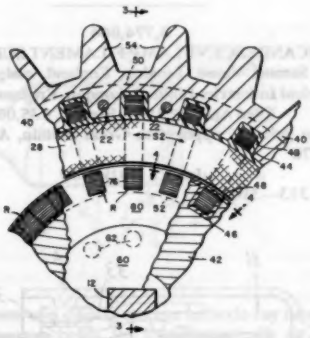
A movable armature is arranged between a pair of juxtaposed permanent magnet assemblies each carrying a respective pair of electrical coils. The armature is slidably connected to a two-way motion transmitting mechanism which is subjected to the force or movement to be sensed. The motion transmitting mechanism is adapted to push the armature toward either one of the magnet assemblies until at a predetermined spacing, the magnetic attraction is sufficient to accelerate the armature into engagement with the magnet assembly. The coils are electrically connected such that the current induced by the flux change during the armature acceleration is additive and of opposite polarity, but equal magnitude, depending on the direction of acceleration of the armature.

3,774,059

ROTARY STEPPING MOTOR WITH LAMINATED STATOR AND ROTOR POLE CONSTRUCTION

Irvin W. Cox, East Acton, Mass., assignor to Cambridge Thermionic Corporation, Cambridge, Mass.

Filed Sept. 13, 1971, Ser. No. 179,951
Int. Cl. H02k *37/00*
U.S. Cl. 310—49 1 Claim



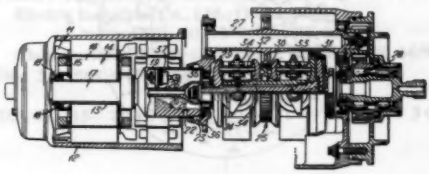
A multiphase rotary stepping motor of the type wherein each phase has a stator with a plurality of flux-conductive stator poles, a rotor with a plurality of flux-conductive rotor poles alignable with the stator poles, and a coil energized with appropriate timing to produce a magnetic field through said stator poles and rotor poles to bring them into alignment to thereby advance or retard the rotation of a shaft to which the rotors are attached. The rotor poles and stator poles are laminated from thin strips of flux-conductive material oriented so that at the confronting pole faces of rotor and stator, the longer dimension of the strip ends extends in a circumferential direction to permit high flux concentration at approaching or receding edges of the rotor and stator poles. The stator poles are constructed from a plurality of nesting strips of flux-conductive material assembled in two abutting C-shaped sections to form a rectangular loop having a gap therein to receive a rotor pole, the coil extending through the loop. The nesting strips in each C-shaped section have straight leg portions, graduated with increasing length toward the outside of the loop, joined by curved corners bent with a common radius of curvature. The leg length is graduated to provide a flush pole face at the gap and a flush abutting face for contact with the other C-shaped section, and the graduated increase in leg length is greater than the strip thickness in order to allow for minor deviations in length. Each C-shaped section is mounted between inner and outer mounting rings by being embedded therebetween with epoxy plastic. The rotor poles are constructed from a single strip of material wound spirally around a core member located axially between the inner rings of the stator. The strip is provided with wide portions forming the rotor poles, alternating with narrow portions between the wide portions. The narrow portions have graduated increases in circumferential length toward the outside of the spiral so that the wide portions are radially aligned and the rotor poles therefore extend radially. The spirally wound strip is mounted by embedding it and an outer flange of the core member with epoxy plastic.

3,774,060

FLUID COOLED DYNAMO ELECTRIC MACHINE

Raymond Sharpe, Mirfield, and Peter Hunt, Shipley, both of England, assignors to Rotax Limited, Birmingham, England

Filed Aug. 5, 1971, Ser. No. 169,448
Claims priority, application Great Britain, Aug. 5, 1970, 37,775/70
Int. Cl. H02k *1/32*
U.S. Cl. 310—61 5 Claims



A dynamo electric machine in which there is at least one rotatable component mounted on a shaft wherein there is provided a de-aeration chamber connected to the shaft for rotation therewith, the shaft having an axial bore along which cooling fluid can flow and the de-aeration chamber being in communication with said axial bore so that cooling fluid flowing through the bore can pass into the chamber by centrifugal force where it is de-aerated.

3,774,061

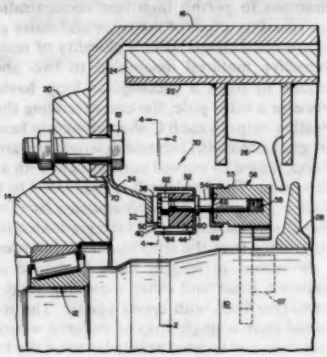
WHEEL SPEED SENSOR

Louis M. Fiteny, Dearborn Heights, and Leo G. Oehring, Wyandotte, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 16, 1972, Ser. No. 263,686
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 11 Claims

A self-adjusting wheel speed sensor mechanism including a magnetic sensor and rotor on a vehicle axle and wheel. The

sensor and rotor are automatically adjusted to a predetermined relationship as the wheel is mounted on the axle and are



maintained in that relationship during operation of the vehicle.

3,774,062

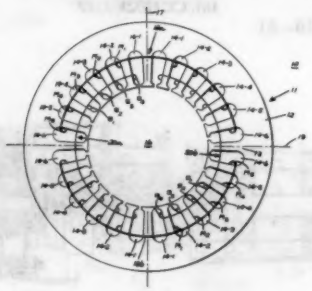
STATOR ASSEMBLY FOR SINGLE PHASE INDUCTION MOTOR EMPLOYING ALUMINUM ALLOY STARTING WINDING

John H. Johnson, Holland, Mich., assignor to General Electric Company, Fort Wayne, Ind.

Filed Dec. 20, 1971, Ser. No. 209,673

Int. Cl. H02k *3/02*

U.S. Cl. 310—184 **10 Claims**



Stator assembly for a motor includes slotted magnetic core with main and auxiliary windings in core slots. Main winding comprises at least two sections each forming a main pole. Auxiliary winding in form of a starting winding also includes at least two sections forming poles angularly displaced from the main poles. Each starting winding is formed of a material that yields the same motor operating performance as a copper starting winding design with a backlash section and yet is provided with fewer, if any, backlash turns as compared to such copper winding arrangement. Preferred auxiliary winding materials have an electrical conductivity of about 29% IACS (International Annealed Copper Standard), a density of about 0.1 pound per cubic inch, and a specific heat at 25° Centigrade of about 0.2 calories per gram per degree Centigrade. When alloy materials are used, the major alloying material or materials, in terms of percentage by weight of the alloy, comprise a sufficiently large percent of the alloy (by weight) that normal manufacturing and processing variations causing variations in the amount of such alloying material or materials still permit the economical manufacture of an alloy having a desired nominal resistivity.

3,774,063

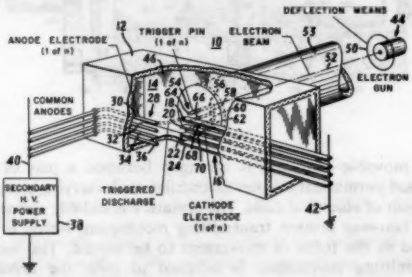
SELECTIVE EXCITATION OF A GASEOUS REGION

Leo Beiser, Flushing, N.Y., and Emile A. Darcy, Westport, Conn., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,016

Int. Cl. H01j *17/30, 17/48*

U.S. Cl. 313—73 **13 Claims**



Apparatus for the selective excitation of a gaseous region including a chamber enclosing a gas and containing cathode means having a plurality of portions positioned in a first predetermined pattern, and anode means having a plurality of portions positioned in a corresponding pattern. A voltage normally insufficient to cause conduction is impressed between anode and cathode and scan means is provided for causing successive corona discharges which sequentially establish charge carriers in the space between successive portion of the cathode and successive portions of the anode. The charge carriers, in turn, enable heavy conduction between cathode and anode in successive regions of space. The scan means thus addresses the heavy conduction, which can be viewed directly, as in a plasma display device, or used to establish desired modes od oscillation in a laser capable of a plurality of modes of oscillation.

3,774,064

INCANDESCENT LAMP FILAMENT SUPPORTS

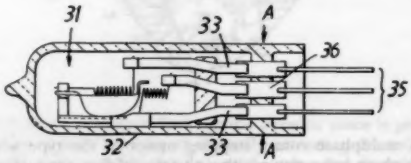
Arthur Samuel Vause, London, England, assignor to Thorn Electrical Industries Limited, London, England

Filed Apr. 19, 1971, Ser. No. 135,002

Claims priority, application Great Britain, Apr. 16, 1970, 18,294/70

Int. Cl. H01k *9/00*

U.S. Cl. 313—316 **11 Claims**



Incandescent lamps such as vehicle lamps, projector or general lighting lamps have their internal components including one or more filaments supported within their envelopes on

a plurality of sheet metal fingers through which current is supplied to the filament(s). The lamps can be made from a metal sheet provided with a series of fingers which are all interconnected at their roots by a portion of the sheet; after affixing internal components of the lamp to selected fingers and securing the fingers together, for example by an insulating bridge, the interconnecting portion is severed from the fingers thereby physically isolating the fingers from one another.

3,774,065

HOLOGEN FILAMENT LAMP

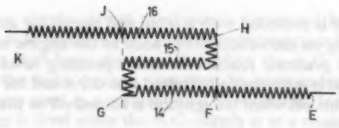
Herbert Kamiel Maria Op de Beeck, and Victor Rosalie Notelteirs, both of Emmasingel, Eindhoven, Netherlands

Filed Apr. 6, 1972, Ser. No. 241,663

Claims priority, application Netherlands, Apr. 17, 1971, 7105200

Int. Cl. H01j *1/16, 1/92, 19/48*

U.S. Cl. 313—344 **1 Claim**



A halogen filament lamp for copying purposes in which the filament is constructed from filament segments which are connected together by intermediate members; each intermediate member is formed from a helically wound wire which forms one assembly with the adjacent filament segments, a short-circuiting wire being wound across the winding of said intermediate member.

3,774,066

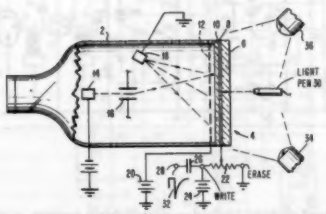
INTERACTIVE-DISPLAY STORAGE CATHODE RAY TUBE

Benjamin Kazan, Bedford Hills, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1972, Ser. No. 222,251

Int. Cl. H01j *31/26*

U.S. Cl. 315—10 **4 Claims**



Modification of a display storage cathode ray tube that employs an electron beam for impingement on an insulating phosphor to switch the latter from an OFF state (low voltage) to its ON state (high voltage), using a flood beam of electrons to maintain the phosphor stably either at high or low voltage. Modification consists in using a light pen, having a higher intensity or different spectral distribution than the ambient light of the cathode ray tube, which is used to shift the voltage of the phosphor by photoconductive action toward the potential of a backplate to achieve either writing or erasing, depending on the backplate potential.

3,774,067

CIRCUIT ARRANGEMENT FOR CORRECTING A LINE DEFLECTION CURRENT FLOWING IN A PICTURE DISPLAY APPARATUS

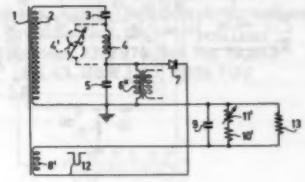
Peter Ketelaar, Emmasingel, Eindhoven, Netherlands

Filed Aug. 12, 1971, Ser. No. 171,179

Claims priority, application Netherlands, Aug. 18, 1970, 7012149

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **6 Claims**



A circuit arrangement for correcting the line deflection current in a picture display apparatus. The parallel arrangement of a capacitor and one or more current sources is connected in series with the deflection coil and the series arrangement of a rectifier conducting during the flyback period and an RC network is connected in parallel therewith. The linearity may be improved and/or other corrections may be performed with the aid of the current sources. The voltage produced across the RC network may be used as a supply voltage elsewhere in the display apparatus.

3,774,068

VERTICAL DEFLECTION DEVICE

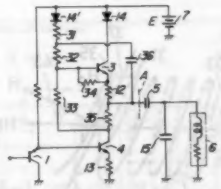
Noboru Yasumatsuya, Kadoma, Japan, assignor to Matsuhita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 30, 1970, Ser. No. 93,775

Claims priority, application Japan, Dec. 6, 1969, 44/98144; Dec. 24, 1969, 44/104098

Int. Cl. H01j *29/70*

U.S. Cl. 315—27 TD **3 Claims**



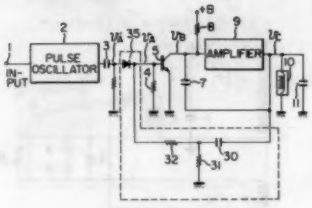
A vertical deflection device in which an output terminal of a single-ended push-pull circuit is connected with a deflection coil and a closed circuit is formed in which said deflection coil is included but not a transistor which constitutes said single-ended push-pull circuit during a blanking period, thereby to cause a free oscillation in said closed circuit with small attenuating resistance.

3,774,069

VERTICAL DEFLECTION DEVICE FOR USE IN TELEVISION RECEIVERS

Noboru Yasumatsuya, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Dec. 13, 1971, Ser. No. 207,016
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 6 Claims



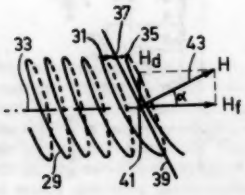
In a vertical deflection device for use in a television receiver comprising a pulse oscillator, a switching element actuable in response to a pulse from the pulse oscillator, an integrating circuit connected to the switching element, and a deflection coil connected to the integrating circuit, the fly-back pulse applied to the input terminal of the deflection coil or a pulse obtained by shaping said fly-back pulse is applied to the switching element. Stable vertical deflection can be ensured independently of the variation of the pulse width of the pulse generated by the pulse oscillator.

3,774,070

DEFLECTION COIL SYSTEM, IN PARTICULAR FOR A CAMERA TUBE

Louis Maarten Swart, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 22, 1972, Ser. No. 255,531
Claims priority, application Netherlands, May 26, 1971, 7107285
Int. Cl. H01j 29/70
U.S. Cl. 315—27 XY 10 Claims



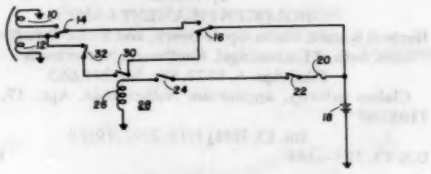
A deflection coil system, in particular for a camera tube, consisting of two pairs of coaxial cylindrical coils. Each coil consists of a helical conductor with turn planes which are arranged at an angle. The normals of the turn planes are arranged in a half-plane on one side of the cylinder axis in each coil. The four half-planes together form two mutually perpendicular planes.

3,774,071

HEADLIGHT CONTROL

Robert E. Goodrich, 2496 Birch Tree Dr., Germantown, Tenn.

Filed July 24, 1972, Ser. No. 274,591
Int. Cl. B60q 1/04
U.S. Cl. 315—82 4 Claims



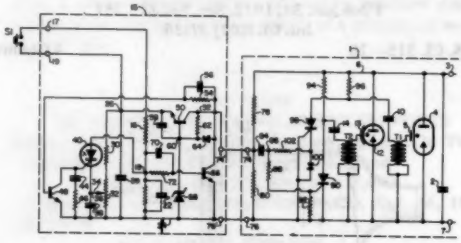
A vehicle is provided with a relay and circuit for automatically turning on the headlights as soon as the engine is turned on and oil pressure reaches normal operating level or the transmission is automatically shifted into drive and for turning the headlights off when the ignition is turned off or the engine stops.

3,774,072

REMOTELY POWERED QUENCH CONTROL SENSING TRANSMITTER

Francis T. Ogawa, Denver, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 108,876, Jan. 22, 1971, Pat. No. 3,714,443. This application Aug. 31, 1972, Ser. No. 285,474
Int. Cl. H05b 37/02; H01j 39/12
U.S. Cl. 315—151 8 Claims



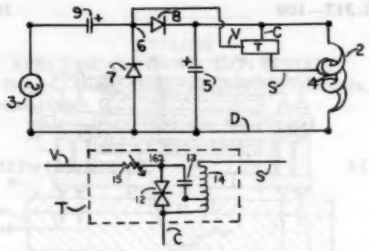
A light control system includes a switching means, a sensing transmitter, and a flash device, connected serially, with the sensing transmitter connected to the flash device by only two wires. The switching means is selectively operable for providing a contact closure to effect the apparent production of a light from the flash device for the illumination of a scene to be photographed. Gating means is responsive to a signal indicative of the firing of the flash device to activate the normally insensitive sensing transmitter to receive light from the scene. A signal to effect the apparent termination of the light provided by the flash device is generated by the sensing transmitter when sufficient light is received from the scene. Dynamic anticipation means provides a time varying compensation for the light intensity-time variation characteristic of flash devices.

3,774,073

LOW HEAT STROBOSCOPE CIRCUIT

Henry N. Switsen, 11319 Van Owen St., N. Hollywood, Calif.

Filed Aug. 2, 1971, Ser. No. 168,270
Int. Cl. H05b 37/00
U.S. Cl. 315—227 8 Claims



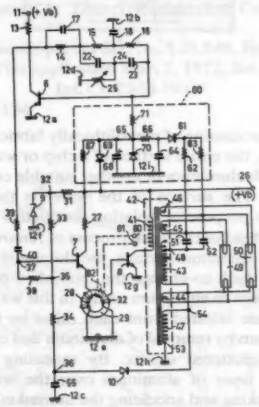
A very simple circuit to eliminate unwanted heating and avoid power waste in A.C. powered stroboscopes by insuring that the flash-lamp does not fire while the A.C. supply can charge the lamp storage capacitor, by rearranging the same basic parts used in a conventional stroboscope. In one circuit the lamp is fired when the A.C. supply is at a negative or low positive voltage, while the capacitor charging diode allows current flow only during the positive A.C. cycle. In another circuit the lamp is fired when the A.C. supply is at a positive or low negative voltage, but the capacitor-charging diode allows current flow only during the negative A.C. half cycle.

3,774,074

ARRANGEMENT FOR SUPPLYING AT LEAST ONE GAS AND/OR VAPOUR DISCHARGE LAMP

Andre Souvay, Evreux, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 12, 1972, Ser. No. 270,988
Claims priority, application France, July 13, 1971, 7125738; Jan. 25, 1972, 7202436
Int. Cl. H05b 37/00
U.S. Cl. 315—239 7 Claims



The invention relates to an arrangement provided with a dc-ac converter for supplying lamps, in which the converter is controlled by an auxiliary oscillator. According to the invention the waveform of the output voltage of the auxiliary oscillator is adjustable so that an adaptation of the converter to a different lamp load is possible. It has also been described that the auxiliary oscillator is stopped in case of the no-load condition of the converter.

ERRATUM

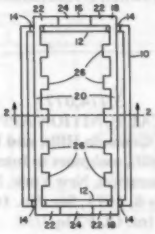
For Class 315—11 see:
Patent No. 3,774,236

3,774,075

PACKAGE INCLUDING ELECTRICAL EQUIPMENT LEAD SHORTING ELEMENT

Alfred L. Medesha, Apache Junction, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 23, 1970, Ser. No. 74,682
Int. Cl. H05f 3/00; H02h 7/20
U.S. Cl. 317—2 R 8 Claims



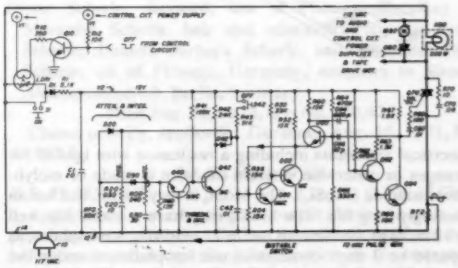
Certain types of electrical equipment can be destroyed or seriously damaged by stray fields such as static electricity. A package is provided for storing or shipping such equipment, the package including an element for shorting the leads of the equipment. The shorting element may comprise a waste product of making the electrical equipment. If desired, modified tubular means may be provided for shorting the leads of the equipment.

3,774,076

ELECTRONIC CIRCUIT BREAKER

Ralph Weinger, Cheltenham, Pa., assignor to Elco Corporation, Willow Grove, Pa.

Filed July 21, 1972, Ser. No. 274,010
Int. Cl. H02h 3/08
U.S. Cl. 317—33 SC 13 Claims



An electronic circuit breaker arranged to deenergize a load when its current exceeds a first predetermined value or when its current exceeds a second (lesser) predetermined value for a predetermined interval. The circuit breaker includes an

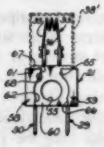
electronic switch which is in series with the load and which is arranged to remain conductive after its control electrode is energized, so long as a potential difference exists across its maintain electrodes; a pulse generator arranged to apply a series of pulses to said control electrode; a bistable switch which controls the generator; an attenuator and integrator for actuating said switch in response to either a relatively high voltage or a relatively medium-valued voltage of a predetermined duration; and means for supplying to said attenuator and integrator a voltage proportional to the load current. The foregoing circuitry is energized by a latch circuit comprising a momentary contact manual switch paralleled by a photoresistor which is responsive to a light source. The light source is energized whenever the load is energized. Thus actuation of the manual switch will turn on the pulse generator, causing the load to be energized, whereby the photoresistor will bypass the manual switch when the manual switch is released. When a short or overload current occurs, the pulse generator will be stopped, turning off the electronic switch and releasing the latch, whereby the circuit will remain off until the fault is corrected and the manual switch is reactuated.

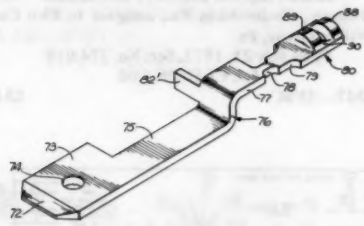
3,774,077

ELECTRICAL IGNITION APPARATUS

Joseph Gino Raffaelli, Granada Hills, and Reed Albert Palmer, Glendale, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 8, 1971, Ser. No. 160,827
Int. Cl. F23q 7/10
U.S. Cl. 317—98 **22 Claims**





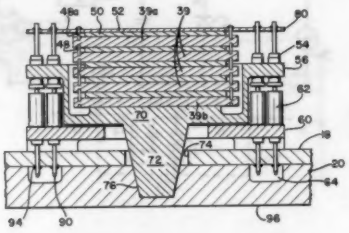
Electrical apparatus including a resistance wire ignitor for gas ranges or otherwise wherein the wire is made of molybdenum disilicide ($MoSi_2$). The $MoSi_2$ is very brittle, but has an exceedingly long life. The $MoSi_2$ may have a useful life well over 18 months, continuous use in an oxidizing atmosphere, as compared to 3 days continuous use for platinum under the same conditions. A number of problems were solved according to this discovery. Shock resistance was improved by use of dead soft electrical connectors having necked down portions to take a set rather than damage the brittle wire. A good 310 stainless steel connector to wire bond was discovered. The bond is made with an alloy of 18 percent nickel and 82 percent gold. The ignitor also has a snap-on shield.

3,774,078

THERMALLY INTEGRATED ELECTRONIC ASSEMBLY WITH TAPERED HEAT CONDUCTOR

Jacob H. Martin, Wellesley, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 29, 1972, Ser. No. 239,240
Int. Cl. H05k 7/20
U.S. Cl. 317—100 **16 Claims**



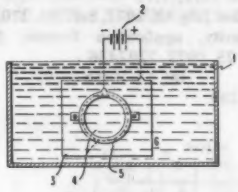
Heat is conducted from electronic equipment through tapered thermal conductors.

3,774,079

MONOLITHICALLY FABRICATED TRANISTOR CIRCUIT WITH MULTILAYER CONDUCTIVE PATTERNS

John H. Zechman, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 25, 1971, Ser. No. 156,729
Int. Cl. H01l 11/00
U.S. Cl. 317—101 A **14 Claims**



During the processing of monolithically fabricated semiconductor circuits, the entire surface of a chip or wafer is covered completely with aluminum or another suitable conductive pattern material. The surface of the wafer is then selectively masked for the purpose of isolating conductive patterns from each other. Instead of the usual process of removing unwanted portions of the aluminum surface, the aluminum is anodized in an electrolytic bath to change the unmasked portions of the aluminum pattern to aluminum oxide. In this way, the conductive patterns are isolated from each other by the aluminum oxide rather than by removal of aluminum and covering of the surface with sputtered quartz. By repeating the steps of evaporating a layer of aluminum over the wafer and then selectively masking and anodizing the unmasked areas, a multilayer interconnection pattern can be formed without the requirement of sputtered quartz between the various layers. With this method, metal conductor crossovers are easily produced thereby obviating the need for crossunders within the semiconductor material. It has been found that the aluminum oxide formed by anodization within the electrolytic bath is not subject to some of the pin hole problems that exist with respect to the sputtered quartz thereby eliminating part

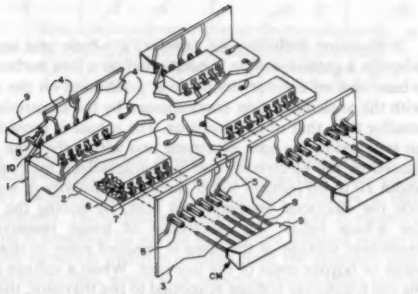
of the problems that has existed to inhibit the widespread introduction of multilayer conductive patterns in the integrated circuit art. A problem, which has existed with multilayer conductive patterns is also obviated by the improved method, i.e. the ability to make reliable electrical connections between the aluminum (or other conductor) of two different interconnection layers, has been extremely difficult or costly with known earlier techniques.

3,774,080

ELECTRICAL CONNECTION SYSTEM

Vaughn Weidel, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sept. 13, 1971, Ser. No. 179,841
Int. Cl. H05k *1/04*
U.S. Cl. 317—101 CC **4 Claims**



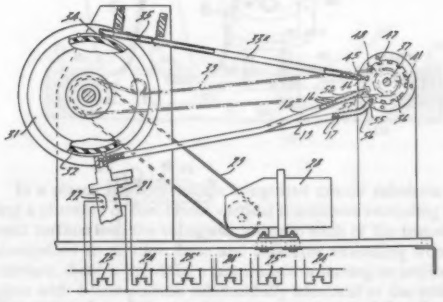
A electrical connection system encludes aligned electrical receptacles disposed on a first member, aligned elecrical receptacles disposed on a second member, and pin members disposed at spaced intervals in a dielectric carrying member which mate with the receptacles when aligned thereby electrically connecting them together.

3,774,081

CONTROL SYSTEM FOR ACCUMULATION CONVEYORS

Robert J. Ebbert, and William R. McBride, both of Rochester, Mich., assignors to Ebbert Engineering Company, Troy, Mich.

Continuation-in-part of Ser. No. 113,540, Feb. 8, 1971, abandoned. This application Mar. 7, 1972, Ser. No. 232,573
Int. Cl. E05b *49/00*
U.S. Cl. 317—134 **18 Claims**



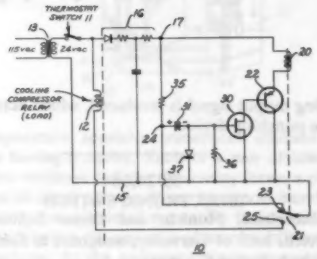
A device for storing and releasing information regarding articles fed into and out of an accumulation or storage conveyor. As each article enters the conveyor, coded information concerning it is placed in accumulation tubes. This information is in the form of a selected set of conductive and/or non-conductive balls, arranged according to a binary code. At a readout station, coaxial wheels pick up each set of balls in sequence and are indexed so that the balls are aligned with switches operating relays. Each set of balls is thus decoded to give an output signal corresponding to the article being discharged.

3,774,082

TIME INTERLOCK FOR AIR CONDITIONING COMPRESSOR AND THE LIKE

Tom C. Chang, Hollywood, Calif., assignor to Cam-Stat Incorporated, Los Angeles, Calif.

Filed Oct. 18, 1972, Ser. No. 298,463
Int. Cl. H02h *7/085*
U.S. Cl. 317—141 S **8 Claims**



A circuit for controlling a load, such as the cooling compressor of an air conditioner, to prevent short cycling. A circuit which provides a time delay or interlock after de-energizing a load, before the load can again be energized. A circuit operable to connect a load and a storage capacitor to a power source in response to external switch closure, and on opening of the switch, to disconnect the load and utilize the charged capacitor to block for a period of time, further load switching regardless of external switch operation.

3,774,083

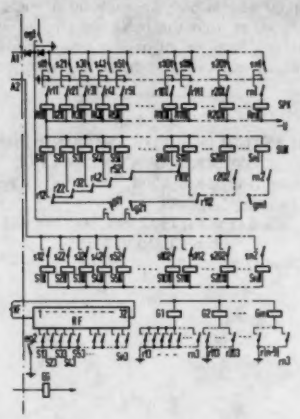
APPARATUS FOR CONNECTING AN OUTPUT DEVICE TO A CIRCUIT TO BE MONITORED

Dieter Scherle, deceased, late of Planegg, Germany (by Margaret Scherle, heir and administratrix); for Ursula Scherle; Daniela Barbara Scherle, and Alexander Dieter Scherle, all of Planegg, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Aug. 15, 1972, Ser. No. 280,825
Claims priority, application Germany, Aug. 16, 1971, P 21 40 987.0
Int. Cl. H01h *47/00*
U.S. Cl. 317—157 **5 Claims**

Apparatus for connecting an output device, e.g., a tape punch, to a switching installation, the operations of which are being monitored is described. Information on the instantaneous state of the switching installation is transferred into an intermediate store at predetermined times. Second storage switching elements which can be controlled in common with switching elements in the intermediate store form a storage chain. In order to interrogate the storage chain a search chain having switching elements, respectively, adapted to be excited

over corresponding storage switching elements is provided. When a given search switching element responds, a corresponding output signal is produced, which actuates the appropriate punching device.



3,774,084

ELECTRONIC SWITCH

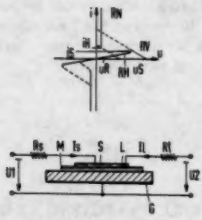
Detlef Haberland, Munich, and Dieter Schuocker, Wine/Osterreich, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Mar. 8, 1972, Ser. No. 232,867

Claims priority, application Germany, Mar. 12, 1971, P 21 12 069.4

Int. Cl. H01l 5/02

U.S. Cl. 317—234 R 9 Claims



An electronic switching element made of vitreous semiconductor materials is described. The switch changes from high to low conductivity or vice versa without changing its state of matter. A plurality of contact electrodes is disposed thereon, and no barrier layer is present. In order to switch from a low conductive to a high conductive state, a highly conductive channel is produced intermediate a control electrode and a base electrode by a control current flowing over the control electrode and the base electrodes. The aforementioned channel expands when the control current increases. Upon a sufficient increase in the size of the channel in the direction of a load electrode, a channel of large conductivity is produced connecting the load electrode and the base electrode over which a load current can proceed. This load current channel is maintained upon interruption of the control current, until, by lowering the auxiliary voltage under a predetermined value, the high conductive state is switched to a low conductive state. The load current is then interrupted.

3,774,085

THYRISTOR WITH MEANS FOR INTERNAL BREAKTHROUGH

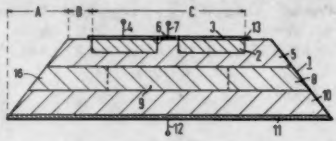
Karl Platzoeder, and Peter Voss, both of Muenchen, Germany

Filed Aug. 17, 1972, Ser. No. 281,469

Claims priority, application Germany, Aug. 23, 1971, P 21 42 204.8

Int. Cl. H01l 11/00, 15/00

U.S. Cl. 317—235 R 7 Claims



A thyristor including an emitter, a *p*-base and an *n*-base wherein a gate electrode is positioned on a free surface of the *p*-base and an emitter electrode is positioned on the emitter, with the area dimension encompassed by the electrodes being smaller than that of the thyristor. The *n*-base is provided with an area below the gate electrode and within the area encompassed by the electrodes that is characterized by a resistivity about 10 to 40 percent lower than the resistivity of areas outside the electrode encompassed area. By having the area of the *n*-base below the electrodes of lower resistivity, the breakover voltage of this area is reached prior to that of the outer or border areas of the thyristor. When a voltage exceeding the breakover voltage is applied to the thyristor, the *n*-base area below the electrodes triggers first and border breakthrough of high current loads is avoided. In embodiments wherein short-circuit rings are utilized, expansion of the triggering process is not prevented. High di/dt values are possible during a breakover triggering process.

3,774,086

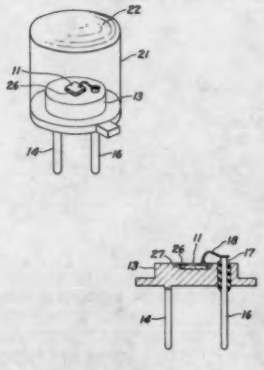
SOLID STATE LAMP HAVING VISIBLE-EMITTING PHOSPHOR AT EDGE OF INFRATED-EMITTING ELEMENT

Charles S. Vincent, Jr., Stuarts Draft, Va., assignor to General Electric Company, Schenectady, N.Y.

Filed Sept. 25, 1972, Ser. No. 291,767

Int. Cl. H01l 11/00, 15/00

U.S. Cl. 317—235 R 5 Claims



A solid state lamp, comprising an infrared-emitting diode mounted to usefully emit infrared radiation from a surface thereof, and a phosphor material placed at or around the edge of the diode to convert edge-emitted infrared energy into visi-

ble light, whereby visible light accompanies the emitted infrared thereby visually indicating whether the lamp is on or off and also aiding in focusing or aiming the infrared.

3,774,087

MEMORY ELEMENTS

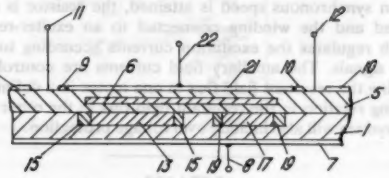
Michael Pepper, London, England, assignor to Plessey Handel Und Investments A.G., Zug, Switzerland

Filed Dec. 8, 1972, Ser. No. 313,374

Claims priority, application Great Britain, Dec. 5, 1972, 370/72

Int. Cl. H01l 11/14

U.S. Cl. 317—235 R 7 Claims



A memory element which is an improved version of the known FAMOS (floating avalanche-injection metal-oxide-silicon) memory elements in that memory erasure is effected electrically. The structure of the known FAMOS memory elements is modified by having at least one diffused region in the silicon substrate which is isolated from the elements gate and drain electrodes, which is of opposite conductivity type to the substrate, and which is situated adjacent to the channel region between the gate and drain electrodes. At least one region of the substrate situated adjacent to the channel region is also isolated from the gate and drain electrodes, the buried gate of the FAMOS structure partially overlaps these isolated regions and a second gate is provided on the surface of the dielectric layer of the FAMOS structure such that it is above and completely overlaps the silicon gate.

3,774,088

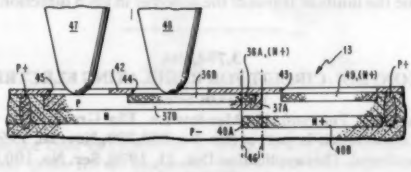
INTEGRATED CIRCUIT TEST TRANSISTOR STRUCTURE AND METHOD OF FABRICATING THE SAME

Ingrid E. Magdo, and Steven Magdo, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,120

Int. Cl. H01l 9/00

U.S. Cl. 317—235 R 8 Claims



In a planar semiconductor integrated circuit substrate having a plurality of functional vertical transistors extending from said surface into the substrate, wherein each of the transistors comprises an emitter, base and collector extending from the surface, there is provided a test transistor having an emitter region with a first portion substantially identical to the emitters of the functional transistors in conductivity-determining profile as well as horizontal and vertical dimensions, and a second portion continuous with the first portion which has said identical profile and vertical dimensions but greatly expanded horizontal dimensions. Likewise, the test transistor has a base region with a first active portion having a profile and horizontal and vertical dimensions substantially identical with the bases of the functional transistors, and a second portion with said profile and vertical dimensions but with greatly expanded horizontal dimensions at the substrate surface.

3,774,089

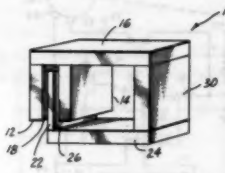
TEMPERATURE INDICATING APPARATUS USING OPPOSITELY VARYING CAPACITORS

Howard B. Lewis, La Canada, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Apr. 18, 1972, Ser. No. 245,057

Int. Cl. H01g 7/00

U.S. Cl. 316—247 4 Claims



A temperature sensitive transducer element includes a structure having a cavity. Each of a pair of inwardly facing conductive surfaces defining the cavity forms a plate of a different one of a pair of capacitors. A support member disposed in the cavity has a pair of outwardly facing conductive surfaces each forming the opposite plate of a different one of the two capacitors. As the ambient temperature varies, the support member translates relative to the structure along a line between the inwardly facing surfaces so that the capacitance of one of the capacitors increases and the capacitance of the other decreases. Preferably, each capacitor controls the frequency of oscillation of a different oscillator circuit. A mixer circuit responsive to the oscillator circuits produces a square wave the frequency of which is an analog indication of ambient temperature. A counting circuit converts the analog indication into a digital representation.

3,774,090

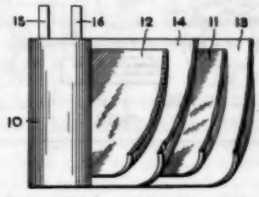
DI-N-SUBSTITUTED AMIDE IMPREGNANTS FOR ELECTRICAL CAPACITORS

Sidney D. Ross, Williamstown, and Manuel Finkelstein, North Adams, both of Mass., assignors to Sprague Electric Company, North Adams, Mass.

Continuation-in-part of Ser. No. 195,780, Nov. 4, 1971, Pat. No. 3,684,932. This application Aug. 9, 1972, Ser. No. 279,140

Int. Cl. H01g 3/175

U.S. Cl. 317—258 7 Claims



Di-N-substituted amides are advantageously used for dielectric oil applications. The appropriate substitution provides the

amides with the required physical and electrical characteristics necessary for use as a dielectric liquid in AC and energy storage capacitors.

3,774,091

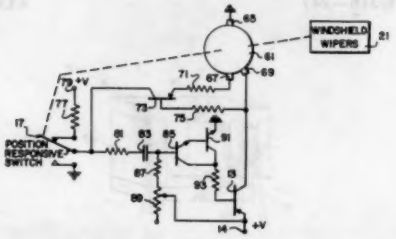
INTERMITTENT WINDSHIELD WIPER SYSTEM WITH ELECTRODYNAMIC BRAKING

Robert W. Kearns, 20524 Rutherford Ave., Detroit, Mich.

Division of Ser. No. 731,531, May 23, 1968, Pat. No. 3,582,747. This application Dec. 22, 1970, Ser. No. 100,826

Int. Cl. H02p *7/28*

U.S. Cl. 318—DIG. 2 **13 Claims**



This specification discloses an intermittent automotive windshield wiper system in which windshield wipers are driven in repeating wiping cycles, stopping for a dwell period at the end of each wiping cycle. The windshield wipers are driven by an electric motor having a permanent magnet field and the wipers are electrodynamically braked to a stop at the end of each wiping cycle. An automatic switch is provided to, in effect, assure that the braking circuit is open at the end of each dwell period when the motor armature is again energized so that DC power is not applied to the braking circuit in parallel with the motor armature at the end of each dwell period.

3,774,092

DRIVE SYSTEM OF SYNCHRONOUS MOTOROS SHARING A COMMON LOAD

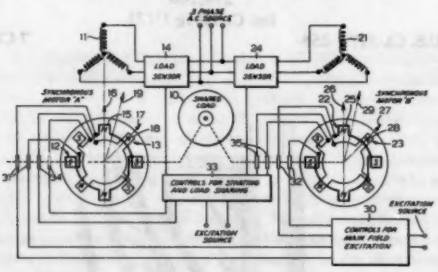
William Albert Messervey; William Albert Wyeth, and John Alexander Irwin Young, all of Peterborough, Ontario, Canada, assignors to Canadian General Electric Company Limited, Toronto, Ontario, Canada

Filed Mar. 8, 1972, Ser. No. 232,684

Claims priority, application Canada, Apr. 14, 1971, 110245

Int. Cl. H02p *7/68*

U.S. Cl. 318—99 **6 Claims**



A drive comprising at least two electric synchronous motors coupled to a common load for driving it, and means for starting the motors and making them share the load. Each motor has a primary winding, i.e., an armature winding, which when energized with polyphase alternating current produces a synchronously rotating magnetic field, and a salient pole main field winding which when energized with direct current produces a steady state magnetic field that interacts with the rotating field so as to cause the rotor to rotate in synchronism with the rotating field. At least one of the motors has an auxiliary field winding distributed on the pole heads of the same magnetic pole structure as the main field winding. This winding is also energized with direct current and when so energized it produces a second steady state magnetic field having polar axes spaced angularly from the polar axes of the main field. These fields combine to produce a resultant greater than either one and situated on polar axes between the main and auxiliary axes. The resultant field governs the point at which the rotor locks in step with the rotating field. The motors having an auxiliary winding are started by connecting this winding to a resistor as in the case of a wound rotor induction motor. When synchronous speed is attained, the resistor is disconnected and the winding connected to an exciter-regulator which regulates the excitation currents according to motor load signals. The auxiliary field currents are controlled for holding the resultant field flux in one motor in a definite load sharing relation to the resultant field flux in the other motor. The system will also include overvoltage protection.

3,774,093

DRIVE DEVICE FOR BACK AND FORTH MOVEMENT

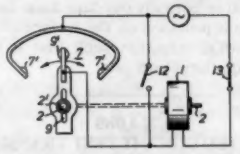
Claus Harken, and Armin Germer, both of Berlin, Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Frankfurt am Main, Germany

Filed June 28, 1972, Ser. No. 267,156

Claims priority, application Germany, June 29, 1971, P 21 32 859.6

Int. Cl. H02k *41/02*

U.S. Cl. 318—135 **14 Claims**



A device receiving power from an electric supply source and providing a drive for a back and forth movement between two end points. An electric motor in the device is a magnet-rotor synchronous motor which reverses its direction of rotation after each stop. The motor shaft is coupled to a driving element, and a follower, operatively associated with this element, is axially displaceable along the element when the element is rotated by the motor. Abutments at each end point define the limits of travel of the follower in each direction.

3,774,094

CONTROL CIRCUIT FOR REGULATING ELECTRIC MOTOR SPEED

Donovan F. Peterson, 655 Meadow Ln., Elm Grove, Wis.

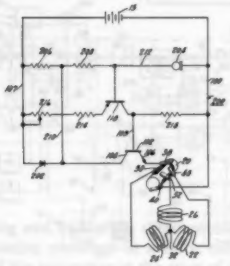
Continuation-in-part of Ser. No. 880,290, Nov. 26, 1969, abandoned. This application Dec. 21, 1970, Ser. No. 100,062

Int. Cl. H02p *5/16*

U.S. Cl. 318—331 **17 Claims**

A control circuit for regulating the speed of a direct current electric motor by intermittent repetitive energization of the motor stator windings. The control circuit is insertable between a direct current power source and the stator windings and is subjectable to a speed responsive self-generated e.m.f. appearing in the windings responsive to the electromagnetic interaction of the magnetic field of the motor armature and the stator windings. The control circuit includes a transistor having the emitter-collector circuit connected between the

power source and the motor stator windings and subjected to the self-generated e.m.f. wave appearing in the windings produced by motor rotation. The base of the transistor is connected to a bias circuit for controlling the operation of the transistor responsive to differential voltages applied to the transistor base and emitter terminals. The bias circuit turns



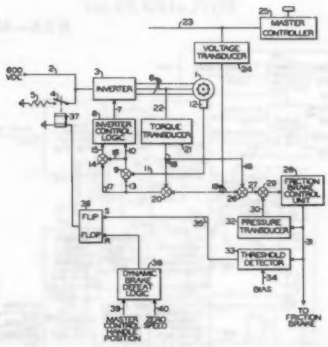
the transistor on when the self-generated e.m.f. of the motor is below a predetermined voltage to energize the stator windings from the power source. The bias circuit includes means for altering the voltage applied to the base of the transistor so that when the self-generated e.m.f. attains a second predetermined voltage the transistor is turned off and the supply of power to the stator windings is terminated.

3,774,095

SYSTEM FOR BLENDING REGENERATIVE AND DYNAMIC AND FRICTION BRAKING

Rudolph A. Coccia, N. Versailles, Pa., assignor to Westinghouse Air Brake Company, Ulmerding, Pa.

Filed Sept. 20, 1972, Ser. No. 290,480
Int. Cl. H02p *3/16, 3/26*
U.S. Cl. 318—371 **9 Claims**



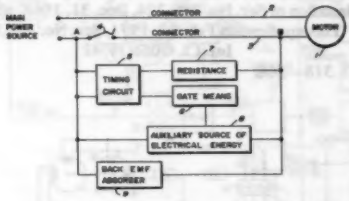
A brake control system for a railway vehicle having an a. c. inverter drive for an induction type motor capable of being operated in a regenerative mode to effect vehicle retardation by either supplying current flow to the system supply source (regenerative braking) for use by other vehicles operating in a power mode or by dissipating the current flow in the form of heat at resistive grids (dynamic braking). The system is normally conditioned so that regenerative braking provides the primary source of vehicle retardation with the torque effort produced being compared with the brake or torque command to effect a friction brake application in accordance with the difference therebetween. The friction brake thus supplements the regenerative brake up to a predetermined point at which it is desired to establish dynamic braking. Once the dynamic brake applies, the combined regenerative and dynamic brake effectiveness results in the torque effort being increased so that the difference between torque effort and torque command is reduced and accordingly the friction brake is released proportionately, thereby providing for combining the friction, dynamic and regenerative brakes, or any combination thereof, in an attempt to provide and maintain a constant rate of deceleration irrespective of variable conditions affecting the degree of regenerative and dynamic braking available.

3,774,096

MOTOR HEATER UNIT

Donald R. Hann, 13501 Ward Way, Saratoga, Calif.

Filed Sept. 17, 1971, Ser. No. 181,497
Int. Cl. H02b *1/02*
U.S. Cl. 318—436 **7 Claims**



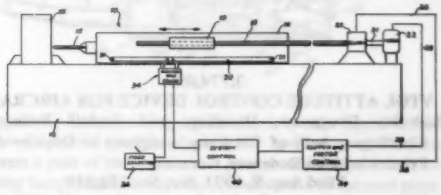
A motor heater unit is disclosed herein for maintaining an AC electric motor in a warm condition when the motor is turned off. The unit comprises in combination a main power source, a plurality of connector means connecting said main power source to said motor, at least all but one of said plurality of connector means containing switch means for breaking the connection between the motor and the main power source, a timing circuit adjusted to pass a portion of the wave form of an electrical signal applied thereto, the timing circuit being connected across the first of said switch means, a gate means connected to receive the output of said timing circuit, an auxiliary source of electrical energy connected across said first switch means and further connected to receive the output of said gate means, said auxiliary source of electrical energy providing electrical energy only when said gate means triggers said auxiliary source of electrical energy, and, a back e.m.f. quenching means connected across said first switch means.

3,774,097

ELECTROMAGNETIC POSITIONING SYSTEM

John R. Roy, 95 Bucynes Dr., North Tonawanda, N.Y.

Filed Sept. 9, 1971, Ser. No. 178,900
Int. Cl. G05b *19/42*
U.S. Cl. 318—563 **8 Claims**



In a machine having two relatively movable members, such as the bed and carriage of a machine tool, drive means for moving one of the members, and control means coupled to the drive means, a positioning system for changing the relative movement of the machine members after a predetermined

distance has been traveled. A retentive member of magnetizable material, such as a steel tape or rod, is mounted on one of the machine members, for example on the carriage, and is disposed generally parallel to the direction of relative movement. A magnetic recording means is mounted on the other machine member for magnetizing the retentive member at a discrete point thereon corresponding to the relative position of the machine members at which movement is to be changed. This recording is sensed by means which develops an electrical signal for causing the machine control to change the movement, for example to stop the carriage.

3,774,098

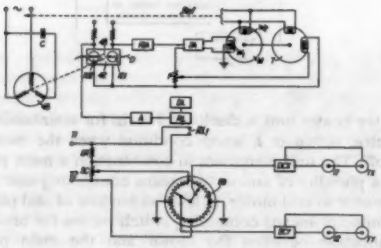
MACHINE TOOL CONTROL

Brian Yoxall Moss, Thornton Heath, England, assignors to Morfax Limited, Mitcham, Surrey, England

Continuation of Ser. No. 788,224, Dec. 31, 1968, abandoned. This application Feb. 22, 1971, Ser. No. 117,831

Int. Cl. G05b *19/42*

U.S. Cl. 318—568 **8 Claims**



The invention is concerned with the production of recorded program for the continuous path control of machine tools. The program is produced by means of a line follower device or equivalent means, and the driving means for displacing the line follower in response to steering movements of a rotary member of the latter as it follows the line produces alternating current signals the frequency of which lies above or below a reference frequency which is also recorded preferably with a further signal recording the planned movement of a cutting tool towards and away from the cutting position. Such a recorded program actuates servo motors on the machine tool for displacing the workpiece relatively to the tool the drive of the motors being controlled by comparison of the reproduced reference frequency with the recorded control signals to provide a control output to the drive motors dependent on the variable recorded frequencies representing the desired movements of the workpiece relatively to the tool.

3,774,099

VTOL ATTITUDE CONTROL DEVICE FOR AIRCRAFT

Radoslav Draganow, Wessling, and Rudolf Reitemeier, Uberlingen, both of Germany, assignors to Dornier A.G., Friedrichshafen/Bodensee, Germany

Filed Aug. 9, 1971, Ser. No. 170,019

Claims priority, application Germany, Aug. 18, 1970, P 20 40 857.5

Int. Cl. G05d *1/00;* **B64c** *13/18*

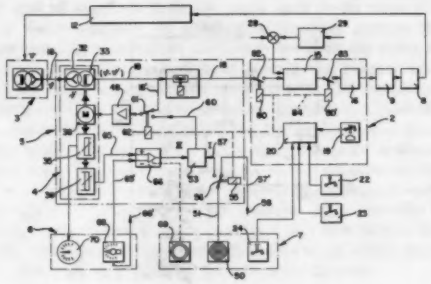
U.S. Cl. 318—584 **15 Claims**

This invention relates to a control device for aircraft, particularly those having vertical and horizontal and/or hovering flight properties, with a position regulation being operative only during the vertical and/or the transitional flight phases, which comprises

a VTOL attitude regulator,

a position platform,

preselecting means for the preselection and storage of theoretical pitching position values,



comparator means connected to said preselecting means, cooperating with said preselecting means, and being installed in the automatic control system between the position platform and the VTOL attitude regulator, and

an arbitrarily actuatable release means which applies the preselected stored theoretical values to the comparator means.

3,774,100

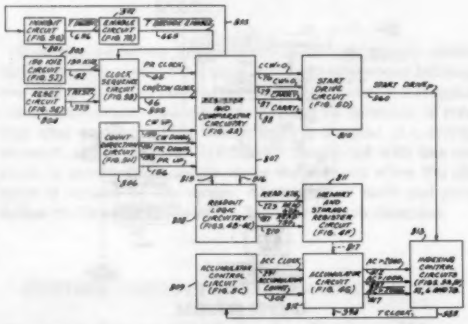
TURRET INDEXING MOTOR CONTROL SYSTEM

Joseph J. Barber, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.

Continuation-in-part of Ser. No. 77,139, Oct. 1, 1970, Pat. No. 3,675,107. This application June 1, 1971, Ser. No. 148,741

Int. Cl. G05b *19/28*

U.S. Cl. 318—601 **4 Claims**



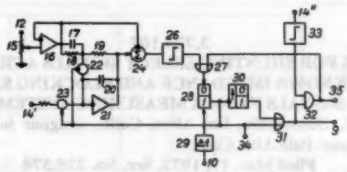
An indexing control system for a rotatable turret punching press where tool stations have different indexing distances therebetween and a read only memory stores the number of indexing pulses required to index between each pair of adjacent stations. A position register functions to provide a present position value at the beginning of each indexing operation and also serves to control readout from the memory of the number of indexing pulses required to execute a new command. The total number of indexing pulses required for indexing movement in a given direction may be accumulated and then used to control the actual indexing movement of the turret (and also the direction of indexing movement, if desired).

3,774,101

OVERLAP CALCULATOR FOR CONVERTER RECTIFIER

Kjell Helgesson, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed June 22, 1972, Ser. No. 265,197
Int. Cl. H02m 7/00
U.S. Cl. 321—45 C 7 Claims



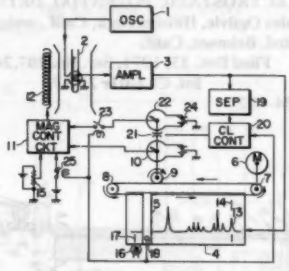
For calculating and indicating the commutation time for a pair of commutating rectifiers in a static converter, the load current value of the converter at the start of the commutation is stored in an integrating memory circuit. The commutation voltage is connected to the input of the memory circuit at the start of the commutation. The integrated value of the commutation voltage is continuously subtracted during the commutation from the stored current value. The difference between the current values is continuously supervised, and a signal indicating the end of the commutation is emitted when such difference is indicated to have a predetermined value, which may be zero or the current value in question.

3,774,102

AUTOMATIC NUCLEAR-MAGNETIC-RESONANCE POSITIONING APPARATUS

Yoshiharu Utsumi, 1182, Ichige, and Noriyuki Matsubayashi, 1030, Ichige, both of Katsuta, Japan

Filed Dec. 29, 1971, Ser. No. 213,460
Claims priority, application Japan, Dec. 29, 1970, 45/128536
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 8 Claims



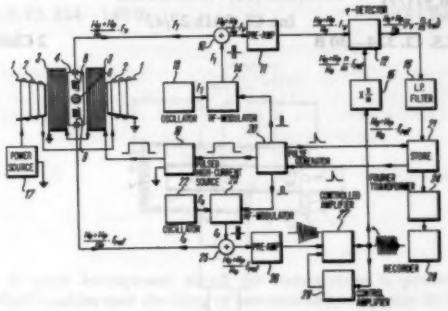
Nuclear-magnetic-resonance positioning apparatus for automatically calibrating a reference line on a recording paper with a specimen to be analyzed containing a standard substance. The apparatus includes means for detecting the distance between the resonance center line of the standard substance and the reference line of the recording paper and providing a DC magnetic field corresponding to this distance as a bias for the swept DC magnetic field utilized in the spectral analysis of the specimen. Namely, a wiper of a potentiometer is mechanically rotated to an angle corresponding to the distance and a bias signal of the potentiometer is applied to the coil which applies the magnetic field to the specimen.

3,774,103

METHOD OF RECORDING SPIN RESONANCE SPECTRA AND A SPIN RESONANCE SPECTROMETER SUITED FOR THE PURPOSE

Gunther Rudi Laukien, Silberstreifen, 7501 Forchheim, Germany

Filed July 21, 1971, Ser. No. 164,701
Claims priority, application Germany, Dec. 11, 1970, P 20 61 018.8
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 16 Claims



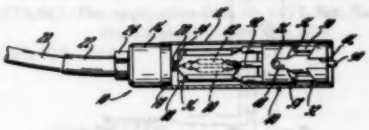
In recording spin resonance spectra, when the sample is excited by an RF-pulse in a homogeneous magnetic field for measurement and then all resonance frequencies of the sample are registered as an interferogram and evaluated, a pulse-excited magnetic field for measurement is used according to the invention. In this way, higher field strengths can be achieved for the magnetic field of measurement than has been possible before. These higher field strengths permit improved resolution of the fine structure of macromolecules. A spin resonance spectrometer suited for this method has an air-core coil for generation of the excited magnetic field and an energy source connected with the air-core coil which comprises devices for keeping constant the current flow in the coil for the duration of the respective pulse.

3,774,104

LIQUID CONDUCTIVITY MEASURING APPARATUS

Marinus Leland Andersen, Ames, Iowa, assignor to Hach Chemical Company, Ames, Iowa

Filed Dec. 13, 1971, Ser. No. 207,297
Int. Cl. G01r 27/24; G01n 27/06
U.S. Cl. 324—30 B 7 Claims



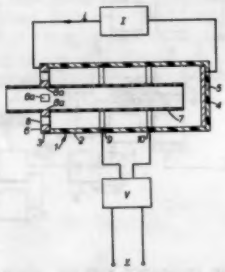
Apparatus for measuring the conductivity of a liquid including an improved probe adapted for confining conduction between a pair of electrodes to a predetermined path and for housing temperature compensation elements in thermal proximity to the liquid. The probe incorporates an insulating element being characterized in that it defines the boundaries of a pair of channels between the electrodes in which all electrical conduction through the liquid takes place. The insulating element additionally defines input conduits for entry of the liquid into the channels as the probe is immersed into the liquid and exit conduits from which the air displaced from the channel

can escape, the input and exit conduits intersecting the channels at points of equal potential with respect to the potential at either electrode so that conduction through these conduits to the external environment is prevented.

3,774,105
CONDUCTIVITY CELLS

Michael Laurence Henning, Somerset, and Leslie Kenneth Godfrey, Stalbridge, both of England, assignors to Plessey Handel und Investments A.G., Zug, Switzerland

Filed June 22, 1972, Ser. No. 265,364
Claims priority, application Great Britain, June 29, 1971, 30,371/71
Int. Cl. G01h 27/42
U.S. Cl. 324—30 B **2 Claims**

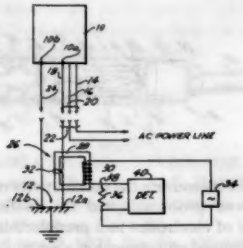


A conductivity measuring cell comprising two tubes arranged concentrically one within the other the outer tube being closed at one end, a first pair of electrodes for connection to a current source one of which is disposed at the bottom of the outer tube and the other of which is disposed near the open end of the outer tube and adapted to extend within the inner tube so as to make contact with any fluid contained therein, and a further pair of electrodes, for connection to a voltage measuring arrangement, disposed within an annular space between the tubes and arranged in spaced apart relationship.

3,774,106
ELECTRICAL GROUNDING SYSTEM AND GROUND INTEGRITY CHECKER

Colin A.A. MacPhee, West Hill, Ontario, Canada, assignor to Federal Pacific Electric Company, Newark, N.J.

Filed Sept. 15, 1971, Ser. No. 180,576
Int. Cl. G01r 31/02
U.S. Cl. 324—51 **10 Claims**

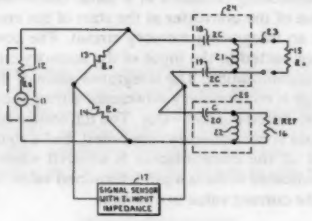


An electrical grounding system for equipment (such as electrical instruments in an intensive-care hospital room) includes two ground conductors, both connected to a common ground and to the equipment to be grounded and forming a loop. In case of a break in one conductor between the equipment and ground, the other conductor maintains the equipment ground. A ground-integrity checking transformer has a secondary winding of few turns interposed as a series element in the grounding loop and injects only a minimal test voltage in the loop. A primary winding of many turns is used for impressing excitation; and the primary winding is in a test circuit that evidences a break in the grounding loop.

3,774,107
MEANS FOR SHUNTING SELECT SIGNALS ACROSS AN UNKNOWN IMPEDANCE AND BLOCKING SAID SIGNALS FROM A MEASURING SYSTEM

Duane E. Dunwoodie, Los Altos, Calif., assignor to Wiltron Company, Palo Alto, Calif.

Filed Mar. 17, 1972, Ser. No. 235,574
Int. Cl. G01r 27/00
U.S. Cl. 324—57 R **7 Claims**

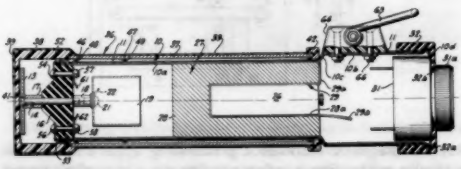


An impedance measuring system with a reference impedance including a network for delivering or absorbing current to or from the impedance being measured. The system uses a second network to cancel the measurement inaccuracy otherwise introduced by the first network.

3,774,108
ELECTROSTATIC POTENTIAL DETECTOR

Allan Rhodes Ogilvie, Hillsborough, Calif., assignor to FRL Incorporated, Belmont, Calif.

Filed Dec. 13, 1971, Ser. No. 207,265
Int. Cl. G01r 29/12
U.S. Cl. 324—72 **5 Claims**



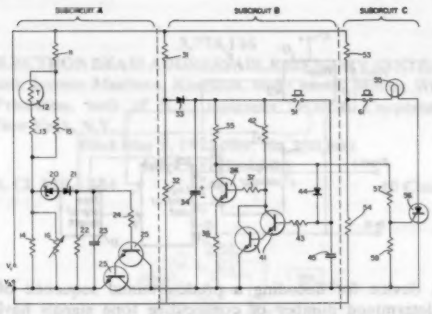
Instrument for detecting presence of energized conductors and determining whether conductors are energized by detecting electrostatic fields produced thereby. An attenuator assembly provides means for adjusting the sensitivity of the instrument, and an on/off switch is arranged in such manner that the instrument is in its most sensitive condition when first turned on.

3,774,109

LOW VOLTAGE INDICATOR

Lubomyr Janycky, 2508 Brown Street, Philadelphia, Pa.

Continuation-in-part of Ser. No. 881,831, Dec. 3, 1969, abandoned. This application Mar. 20, 1972, Ser. No. 236,260
Int. Cl. G01r 19/16
U.S. Cl. 324—103 P 22 Claims



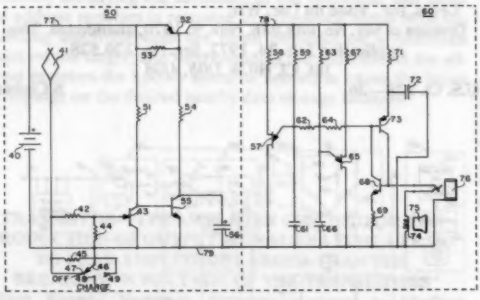
In association with an electric distribution system, apparatus for monitoring and registering for subsequent interrogation an occurrence, sustained for at least a predetermined period, of a voltage condition of the system less than a predetermined voltage, comprising an electric circuit having a temperature compensated threshold voltage sensing subcircuit, an arming, timing and transistor-controlled lock-out subcircuit, and an interrogable readout subcircuit. In alternate embodiments, the holding current of a silicon controlled rectifier is used to accomplish lockout, and a non-interruptable power supply subcircuit is added for retention of the voltage-monitoring state during zero voltage conditions due to power outages.

3,774,110

STATIC ELECTRIC FIELD DETECTOR

Denes Roveti, Annapolis, Md., assignor to Daniel Woodhead Inc., Northbrook, Ill.

Continuation-in-part of Ser. No. 835,866, May 26, 1969, abandoned. This application Nov. 5, 1971, Ser. No. 196,083
Int. Cl. G01r 19/16, 29/12
U.S. Cl. 324—133 2 Claims



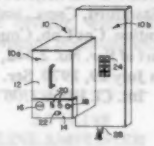
This apparatus is used to detect the presence of static or alternating electric fields. The electric field intensity is sensed with a probe by proximity capacitance coupling. It comprises an antenna which applies any signal it detects to the input of an amplifier. The output of the amplifier is applied to the input of a threshold circuit which conducts when an input signal of greater than a prescribed value is detected. Conduction of the threshold circuit energizes an oscillator which drives indicators of various types. Once a prescribed threshold level is exceeded, display is activated. Hence, the device of this invention provides a go-no-go presentation of field intensities.

3,774,111

PEAK HORSEPOWER METER

William Michael Scott, Montreal, Quebec, Canada, assignor to Canadian National Railway Company, Montreal, Quebec, Canada

Filed Mar. 20, 1972, Ser. No. 235,911
Int. Cl. G01r 7/00; G01l 3/00
U.S. Cl. 324—140 R 15 Claims



A peak horsepower meter for locomotives is provided which enables spot checking of locomotive horsepower during operation. The overall system preferably includes base plates installed on each locomotive which provide first and second signals related to traction motor current and voltage, respectively. A single portable unit which plugs into a socket in each base plate is used to monitor the horsepower for each locomotive. The overall meter circuitry includes a current shunt for producing the first signal and a voltage divider for producing the second signal and an electronic switch for electrically multiplying the two signals together to produce an analog signal related to instantaneous locomotive horsepower, isolation transformers serving to electrically isolate the electronic switch. The analog signal is converted to a peak indication by a circuit including a voltage comparator which compares the analog signal with a signal corresponding to the previous peak and which controls stepping of a stepping motor which drives a digital display device.

ERRATA

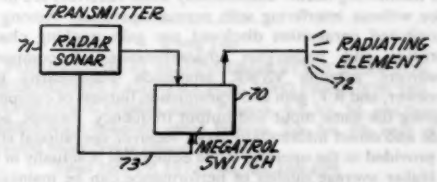
For Class 324—61 R see:
Patents Nos. 3,774,237 and 3,774,238

3,774,112

MEGATROL-HIGH ENERGY TRANSMITTER SWITCH

Joseph J. Panico, Arlington, Mass., assignor to Health Systems, Inc., Woburn, Mass.

Division of Ser. No. 30,385, April 21, 1970, Pat. No. 3,723,887. This application Dec. 16, 1971, Ser. No. 208,764
Int. Cl. H04b 1/04; G01s 7/28
U.S. Cl. 325—164 1 Claim



A control circuit for a radar or sonar or other radiating system having a megatrol-high energy switch. The control ter-

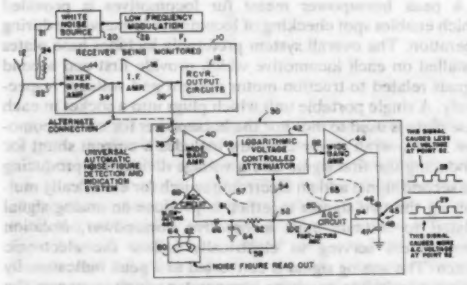
minal of the switch is coupled to the signal pulse source for the radiating system and the main electrodes of the switch are coupled in series with the radiating system output and the radiating element.

3,774,113

APPARATUS AND SYSTEMS FOR TESTING AND MONITORING RECEIVER EQUIPMENT, INCLUDING SYSTEM CAPABILITY FOR CONTINUOUS IN-SERVICE PERFORMANCE MONITORING

Norman E. Chasek, Stamford, Conn., assignor to International Microwave Corporation, Cos Cob, Conn.

Continuation-in-part of Ser. No. 2,342, Jan. 12, 1970. This application July 29, 1970, Ser. No. 59,122
Int. Cl. H04b *1/06*
U.S. Cl. 325—363 **23 Claims**



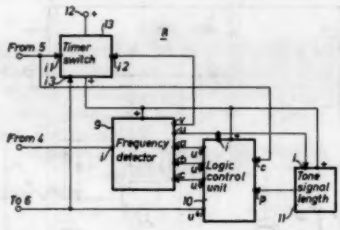
Apparatus and systems for testing and monitoring receiver equipment providing automatic noise figure indication, and capable of continuous in-service performance monitoring. The automatic noise figure indicator has a logarithmic voltage-controlled attenuator with a fast-acting automatic gain control (AGC) feedback loop for keeping the attenuator output constant, with read out means connected to the AGC loop and responsive to its alternating voltage level for providing information on the noise figure. A white noise test source is gated on-and-off at predetermined frequency F_1; for continuous in-service performance monitoring this noise source is also modulated at higher frequency F_2 preferably at least ten times frequency F_1. In continuous monitoring this test noise is introduced at an energy level substantially below the receiver noise energy level, i.e., it is buried to avoid interference with normal receiver operation, and this buried test signal is later retrieved by a signal enhancing correlator. Receiver parameter monitoring occurs continuously while receivers are in-service without interfering with normal operation. Among the monitored parameters disclosed are gain tracking characteristics and phase/gain characteristics of companion receivers, antenna VSWR, amplitude non-linearity in a receiver, and R.F. gain and transmission flatness of equipment having the same input and output frequency. Prompt, accurate and direct information about receiver operational status is provided to the operator while equipment is actually in use; a higher average quality of performance can be maintained because degradation is immediately detectable and thus correctable. Also, potential failures can thereby be anticipated and "down time" reduced. Maintenance costs are reduced because service is done in pre-scheduled normal time.

3,774,114

DECODING DEVICE FOR TONE SEQUENCE CODES

Jan-Ake Dahlgren, Alvsjo, Sweden, assignor to Sonab Development AB, Vallingby, Sweden

Filed Dec. 5, 1972, Ser. No. 312,373
Claims priority, application Sweden, Dec. 6, 1971, 15641/71
Int. Cl. H04b *1/06*
U.S. Cl. 325—492 **9 Claims**



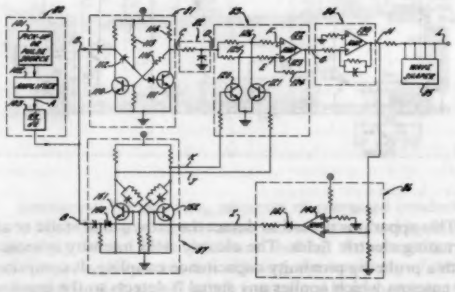
A device for decoding a predetermined sequence of a predetermined number of consecutive tone signals having predetermined frequencies and modulated on a carrier signal is in particular intended to be used as a call signal decoder in receivers in a wireless communication system, in which the receivers are called selectively by means of call signals in the form of tone sequence codes. The decoding device is normally in an inactive state with no power supply voltage connected to its various circuits and consequently with a very low power consumption. The device is put into an active operative state under the influence of the appearance of the carrier signal and remains thereafter in this active state for a time interval during which only the first tone signal in the tone signal sequence modulated on the carrier signal can appear. If this first tone signal is not in conformity with the predetermined tone signal sequence which the decoding device is pre-set to decode, the device is automatically returned to its inactive state. If, on the other hand, the first tone signal is in conformity with said predetermined tone signal code, the device is held in its active operative state for an additional time interval, during which the next tone signal in the tone signal sequence modulated on the carrier signal can appear, and so on, until all tone signals in the tone sequence modulated on the carrier signal have been received.

3,774,115

SIGNAL GENERATOR FOR UNBALANCE DETECTORS

Richard A. Greiner, Madison, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Division of Ser. No. 088,048, Nov. 9, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,528
Int. Cl. H03k *5/08*, *4/08*
U.S. Cl. 328—36 **8 Claims**



An improved system for measuring and signaling the magnitude and angular location of unbalance in a rotatable work-

piece, characterized especially by a non-contacting sine-cosine wave generator which imposes no mechanical inertia or self-contained unbalance on the system while the workpiece is rotationally driven for testing, and which is immune from the adverse effects of variations in the speed of the rotational drive.

3,774,116

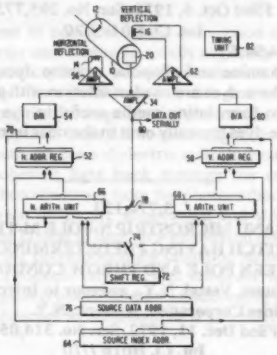
ELECTRON BEAM ADDRESSABLE MEMORY SYSTEM

Frank Jerome Marlowe, Kingston, and Charles Martin Wine, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 5, 1972, Ser. No. 250,803

Int. Cl. G11c *11/26*

U.S. Cl. 328—124 **10 Claims**



A block-oriented random-access information storage system is disclosed which includes a cathode ray tube, horizontal and vertical address registers for binary information identifying rectangular coordinate data storage locations on a target in the cathode ray tube, and digital-to-analog converters coupling the contents of the horizontal and vertical address registers to respective horizontal and vertical beam deflection means for the cathode ray tube. The electron beam is deflected to desired information storage locations on the target with great precision by first deflecting the beam to a nearby relatively large indexing electrode on the target, successively modifying the addresses in the horizontal and vertical address registers in response to a feedback signal from the indexing electrode until the beam impinges on a reference point on the target, and then changing the addresses in the address registers the known amounts needed to cause the beam to impinge on the desired nearby data storage location.

3,774,117

TRANSISTOR-TYPE AMPLIFIER CIRCUIT FOR THE PRODUCTION OF OUTPUT SIGNALS HAVING A PEAK-TO-PEAK AMPLITUDE LARGER THAN THE BREAKDOWN VOLTAGE OF THE TRANSISTORS

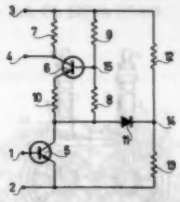
Albert Kovacs, Budapest, Hungary, assignor to Medicor Muvek, Budapest, Hungary

Filed June 1, 1971, Ser. No. 148,475

Int. Cl. H03f *3/04*

U.S. Cl. 330—14 **4 Claims**

A transistor type amplifier is provided in which the maximum signal applied is greater than the breakdown voltage of the individual transistors in the circuit. An additional transistor is connected in between the load resistor of a first externally controlled transistor and the externally controlled transistor. The base of the additional transistor is connected to



a point in a voltage divider, which divider is connected between a point of constant potential and the collector of the additional resistor.

3,774,118

LINE AMPLIFIER

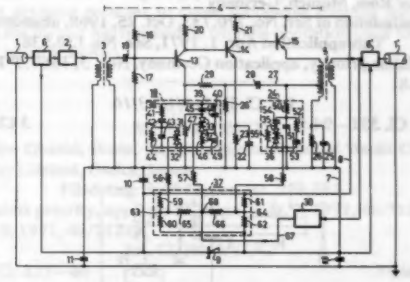
Willem Van Doorn, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 20, 1972, Ser. No. 236,376

Claims priority, application Netherlands, Mar. 27, 1971, 7104149

Int. Cl. H03f *1/08*

U.S. Cl. 330—28 **5 Claims**



A line amplifier constituted by a transistor amplifier comprising a plurality of stages a number of which is locally fed back by a feedback impedance incorporated in the emitter circuit of these stages, and provided with a level control device which is constituted by these feedback impedances which to this end are each formed as controllable capacitive two-terminal networks the control members of which consist of voltage-dependent diodes arranged pairwise in a push-pull configuration, and a control voltage distribution network which distributes the control voltage applied thereto over the diode pairs in such a manner that the ratio between the time constants of the capacitive two-terminal networks remains substantially constant when the control voltage varies.

3,774,119

A.C. POWERED DUAL MAGNETRON STRUCTURE FOR INDEPENDENTLY GENERATING TWO FREQUENCIES

Boris Grigorievich Mashin, ulitsa Popova, 4-a, kv. 34, and Igor Vladimirovich Sokolov, ulitsa Popova, 2-a, kv. 59, both of Fryazino Moskovskoi oblasti, U.S.S.R.

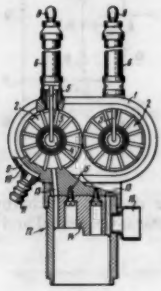
Filed July 19, 1971, Ser. No. 163,699

Int. Cl. H01j *25/50*; H03b *9/10*

U.S. Cl. 331—56 **2 Claims**

A microwave oscillator, more specifically, an a.c.-powered magnetron comprising at least two cathodes disposed in

spaced parallel relation and having an output arrangement. Two multi-cavity anode blocks together with the cathodes make up two oscillatory systems having independent oscillator resonant frequencies and are arranged so that their axes are parallel. The output arrangement may incorporate a wave



guide impedance transformer ensuring independent operation of the two oscillatory systems at their resonant frequencies. The wave guide impedance transformer is expediently located at right angles to a plane containing the axes of the oscillatory systems.

3,774,120

LASER OSCILLATOR WITH INTRACAVITY AMPLITUDE STABILIZATION MEANS

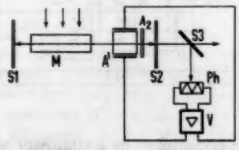
Dieter Ross, Munich, Germany

Continuation of Ser. No. 770,733, Oct. 25, 1968, abandoned. This application Apr. 1, 1971, Ser. No. 130,538

Claims priority, application Germany, Nov. 3, 1967, P 16 14 648.8

Int. Cl. H01s *3/10, 3/16*

U.S. Cl. 331—94.5 **3 Claims**



A laser amplifier including a pumped active material includes a non-linear absorption filter in series therewith for providing amplitude stabilization of its output radiation.

3,774,121

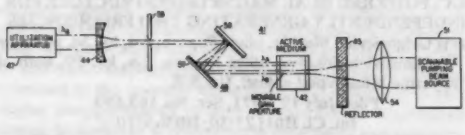
WAVELENGTH SELECTIVE LASER APPARATUS

Arthur Ashkin, Rumson, and Erich Peter Ippen, Middletown, both of N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 13, 1971, Ser. No. 207,032

Int. Cl. H01s *3/10*

U.S. Cl. 331—94.5 **7 Claims**



A wavelength selective laser in which an active dye cell is pumped, a dispersion apparatus inside the laser resonator is used to disperse differing emitted wavelengths along distinct feedback paths in the resonator, and an absorption dye cell inside the resonator is used to selectively transmit the wavelengths to be resonated through low-loss apertures provided therein in response to incident bleaching beams of radiation moving across the resonator cross section. By electronically scanning the bleaching beams, the laser is electronically tuned. The apertures and the dispersion apparatus can be made an integral part of a single dye cell, in which case the wavelengths are selected for oscillation by scannable pumping beams providing movable gain apertures in the otherwise absorbing dye medium. Rapid electronic tuning in a system in which alignment problems are kept to a minimum makes the laser more desirable than similar prior art devices in numerous applications.

3,774,122

BRIDGED CYANINE DYE LASERS

Frank G. Webster, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 6, 1972, Ser. No. 295,773

Int. Cl. H01s *3/20*

U.S. Cl. 331—94.5 **10 Claims**

Bridged enamine and allopolar cyanine dyes are useful as laser dyes. These dyes are used in solution with a non-interfering solvent to form lasing media useful in dye lasers. When excited, these dyes typically emit in the near infrared region of the spectrum.

3,774,123

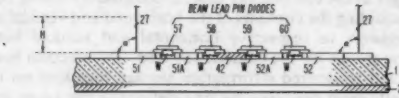
BROAD BAND MICROSTRIP N-POLE M-THROW PIN DIODE SWITCH HAVING PREDETERMINED SPACING BETWEEN POLE AND THROW CONDUCTORS

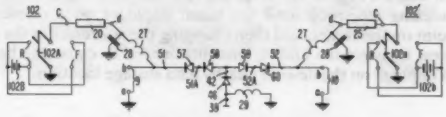
Robert M. Hume, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1972, Ser. No. 314,055

Int. Cl. H01p *1/10*

U.S. Cl. 333—7 D **10 Claims**





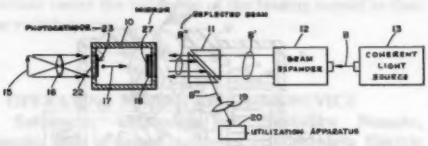
The bandwidth characteristic of a microstrip N-pole M-throw switch is improved by providing the spacing, which is between a printed pole conductor and a printed throw conductor thereof and across which is connected a PIN diode to the two conductors, with a predetermined spacing relationship $W = 0.215\lambda/3$, where λ is the wavelength at the upper frequency of the bandwidth range of the switch. Further improvement of the bandwidth characteristic is provided by utilizing the inductances of bare wire conductors as chokes or as the inductive component of low pass LC filters that are used in the biasing of the switches.

3,774,124

INCOHERENT TO COHERENT IMAGE CONVERTER

Ojars J. Ziemelis, Sunnyvale; Richard A. Coppock, San Jose; Hartmut Sonnenberg, Sunnyvale, and Paul E. Mengers, Redwood City, all of Calif., assignors to GTE Sylvania Incorporated, Mountain View, Calif.

Filed Mar. 28, 1972, Ser. No. 238,829
Int. Cl. H01s 3/10; H01j 31/50
U.S. Cl. 332—7.51 1 Claim



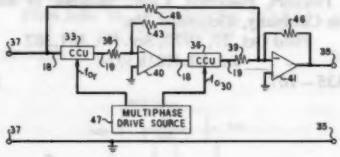
An incoherent to coherent image conversion system comprises a converter unit having an axially aligned photocathode and electro-optic crystal, a source of coherent light (laser) directed through the crystal from one side and an incoherent light image input directed against the photocathode. The side of the crystal opposite from the coherent light source and facing the photocathode has a dielectric reflective coating which reflects the coherent light back through the crystal for a second pass. Photoelectrons from the photocathode produced by the incoherent image are accelerated and strike the mirrored side of the crystal to deposit a modulated charge pattern on the crystal for correspondingly changing its birefringence characteristic (Pockels effect). The coherent light passing through the crystal is phase modulated according to the image pattern and is directed to suitable optical processing apparatus for utilization.

3,774,125

BAND REJECTION FILTER USING TANDEM COMMUTATING CAPACITOR UNITS

Joseph Henry Condon, Summit, and William Kaminski, West Portal, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Nov. 22, 1972, Ser. No. 308,740
Int. Cl. H03h 7/10
U.S. Cl. 333—70 A 7 Claims



Signal attenuation by commutating capacitor units combined in tandem band rejection filter sections is enhanced by driving the units in different phases for commutating capacitor connections in the respective units.

ERRATUM

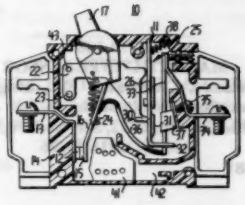
For Class 333—7 D see:
Patent No. 3,774,123

3,774,126

MULTI-POLE TYPE FUSELESS CIRCUIT BREAKER

Yoshitake Araki, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki, Japan

Filed Nov. 9, 1972, Ser. No. 305,079
Int. Cl. H01h 75/00
U.S. Cl. 335—9 3 Claims



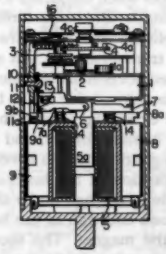
A multi-pole type fuseless circuit breaker comprising a molded casing made of insulating material, a plurality of switching mechanisms mounted in the casing and having a common manually operable handle, and automatic trip devices respectively combined with the corresponding switching mechanisms. Each of the automatic trip devices respectively includes an actuator member secured to a latching member thereof and extending toward a latching member of an adjacent automatic trip device. The actuator member has a free end which is normally separated from the adjacent actuator through a gap and is engageable with the adjacent actuator member to cause successive tripping thereof when the former has finished its tripping operation prior to the latter being actuated.

3,774,127

MOTOR TIMER

Toshiro Ohashi, Ikeda, Japan, assignor to Izumi Denki Company Limited, Osaka, Japan

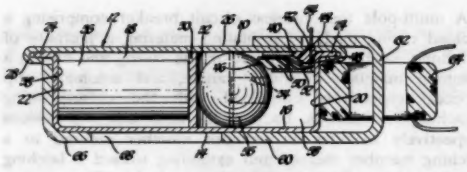
Filed Aug. 7, 1972, Ser. No. 278,282
Claims priority, application Japan, Aug. 9, 1971, 46/71263; Aug. 9, 1971, 46/71266
Int. Cl. H01h 43/02
U.S. Cl. 335—68 3 Claims



A motor timer comprising a casing, an electromagnet disposed within the casing, an instantaneous switch and a timing switch disposed on opposite sides of the electromagnet within the casing, an actuating member extending laterally above the electromagnet and operatively connected to a movable core associated with the electromagnet, spring means normally urging the actuating member away from the electromagnet, a timing gear operatively connected to a motor through a reduction gearing and a clutch unit, and a locking lever extending vertically above the timing switch for normally

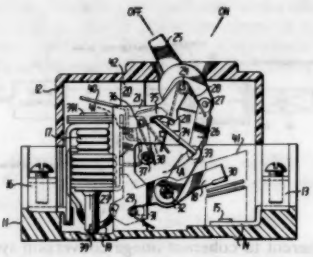
maintaining the timing switch in the locked position. The instantaneous switch can be immediately actuated in response to the energization of the electromagnet, while the timing gear acts to trip the locking lever with predetermined timing while rotation for unlocking the timing switch from its locked position so that the timing switch can be actuated for timing operation.

3,774,128
MAGNETIC TYPE SENSOR
Vincent A. Orlando, Clearwater, Fla., assignor to General Motor Corporation, Detroit, Mich.
Filed July 10, 1972, Ser. No. 270,549
Int. Cl. H01h *51/26*
U.S. Cl. 335—81 **9 Claims**



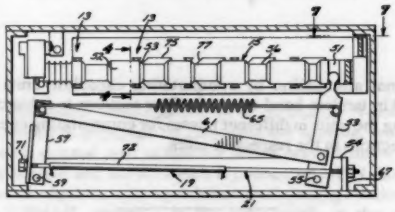
A magnetic type sensor includes an elongated housing having upper and lower spaced planar walls interconnected by arcuate end walls and side walls. A transverse wall includes a pair of angularly related wall portions each having a free end engaging a respective integral rib of one of the side walls. An axial pole magnet has one pole face engaged by the juncture of the wall portions to seat the other pole face thereof on a flat of one of the end walls. A plurality of deflectable contact fingers are mounted on the other end wall and a ball is received between the upper and lower walls for movement on the lower wall between an unactuated position, wherein the ball engages a ball seat provided by the juncture of the transverse wall, and an actuated position, wherein the ball engages one or more of the contact fingers. The ball is held in engagement with the ball seat by the flux of the magnet and moves into engagement with the contact fingers when subjected to a planar impulse of predetermined amplitude and time directed within the included angle d amplitude and time directed within the included angle of the transverse wall. An external bracket includes a first U-shaped portion having one leg portion extending from an upper diametrical side of the ball to the other end wall, a bight portion extending around the other end wall of the housing and the contact fingers, and a lower leg portion extending from the bight portion to a lower diametrical side of the ball. A second portion of the bracket extends from the lower diametrical side of the ball under the magnet and then upwardly along the one end wall of the housing opposite the other pole face of the magnet. The second portion of the bracket includes an opening or air gap underneath the one pole face of the magnet. The bight portion of the first portion of the bracket includes a selectively energizable DC electromagnet for selectively moving the ball into engagement with the contact fingers for test purposes, with the flux path being provided by the first portion of the bracket and by the ball. The magnet and the second portion of the bracket provide a parallel flux path through the ball. The opening or air gap reduces magnetic fringing from the one pole face of the magnet and directs the flux from this pole face through the ball to the second portion of the bracket rather than directly to the second portion of the bracket to thereby resist bounce of the ball between the upper and lower walls of the housing.

3,774,129
NO-FUSE CIRCUIT BREAKER
Sigeru Sugiyama, Tokyo, Japan, assignor to Tokyo Shibaura Electric Company, Kawasaki-shi, Japan
Filed Nov. 9, 1972, Ser. No. 305,078
Claims priority, application Japan, Dec. 1, 1971, 46/112222
Int. Cl. H01h *9/20*
U.S. Cl. 335—167 **3 Claims**



A no-fuse circuit breaker comprising at least one movable contact arm, one end portion of which is rotatably supported on a mechanism frame and the other end of which is provided with a contact point engagable with a stationary contact in the mechanism. An intermediate portion of the movable contact arm is operatively connected to one end of a pair of links operatively connected in series, the other end of the links being operatively connected to an operating handle rotatably mounted on the mechanism frame. A latching member is rotatably mounted on the mechanism frame, being engageable with one end of a releasable member, the other end of the releasable member being operatively connected to a knee connection between the pair of links, whereby the movement of the knee connection is restricted by the releasable member when latched by the latching member. Thus, the movable contact arm is actuated by the operating handle when the releasable member is latched by the latching member, and the movable contact arm can be tripped when the restriction in the movement of the knee connection of the links is released due to disengagement of the releasable member with the latching member as may be caused by the rotation thereof.

3,774,130
LIMIT APPARATUS
Allen L. Teichert, Placentia, Calif., assignor to Robertshaw Controls Company, Richmond, Va.
Filed Oct. 27, 1972, Ser. No. 301,302
Int. Cl. H01h *9/24*
U.S. Cl. 335—167 **10 Claims**



Limit apparatus including a housing having switch means mounted thereon and connected with drive means which is operative in response to a predetermined parameter exceed-

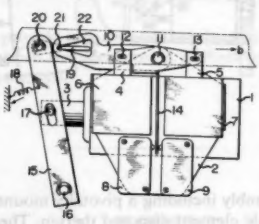
ing a selected magnitude to close the switch means. A cutoff device is coupled with the switch means and includes a lever arm carried pivotally from the housing and biased to a cutoff positon holding said switch means open but normally maintained in an inoperative position by means of electromagnetic means which selectively attracts a ferromagnetic keeper carried on such lever arm to maintain such lever arm pivoted against the bias of such biasing means. Limit control means is connected in circuit with the electromagnetic means and is responsive to a selected parameter to de-energize such electromagnetic means to release the keeper to enable the lever arm to rotate under the influence of the biasing means to thus open the switch means.

3,774,131

OPERATING MODE SWITCHING DEVICE

Hideki Sakumoto, Hirakata, and Yoshiteru Namoto, Moriguchi, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 28, 1972, Ser. No. 310,004
Claims priority, application Japan, Dec. 1, 1971, 46/097362
Int. Cl. H01h *3/04*
U.S. Cl. 335—189 **4 Claims**



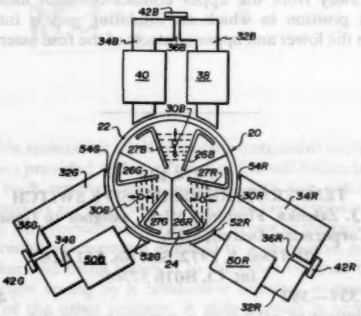
An operating mode switching device comprising a driving source (e.g., a solenoid), and a plurality of control levers which may be moved selectively, wherein a switching cam movable in a predetermined direction by said driving source is rotated as desired so that the nose portion of the switching cam contacts with one of the engaging projections formed in the control levers and disposed at different positions from one another to thereby selectively move one of the control levers.

3,774,132

DYNAMIC CONVERGENCE SYSTEM

Marvin E. Miller, Des Plaines, Ill., assignor to Warwick Electronics, Inc., Chicago, Ill.

Filed June 16, 1972, Ser. No. 263,632
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **24 Claims**



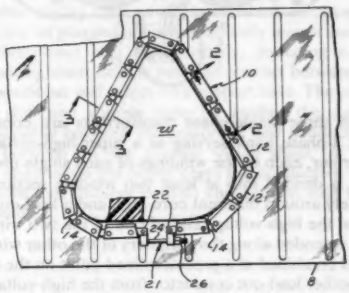
In a color television receiver using a three-gun color CRT with three sets of internal pole pieces, a separate external dynamic convergence assembly is located adjacent each set of internal pole pieces. Two of the three convergence assemblies incorporate magnetic flux rotation means for unbalancing the magnetic flux field across the associated internal pole pieces to deflect an electron beam along an axis skewed to a radial direction. The flux rotation is produced by various combinations of a single deflection coil located on only one leg of a U-shaped core, locating a single pole shoe between one leg of the core and the CRT, and connecting pairs of deflection coils in phase opposition.

3,774,133

WORKHOLDING FIXTURE FOR MACHINE TOOLS

George A. Voges, 46 Florence Street, Springfield, Mass.

Filed Sept. 27, 1971, Ser. No. 184,100
Int. Cl. H01f *7/20*
U.S. Cl. 335—286 **3 Claims**



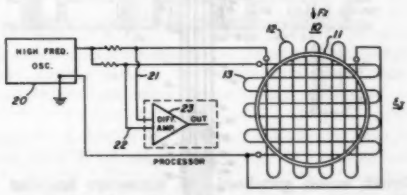
A workholding fixture for machine tools in the form of a ferromagnetic chain composed of readily separable links and clamping means for retaining the chain in an endless loop within or without a workpiece of magnetic or nonmagnetic material.

3,774,134

ANTISOTROPIC THIN FILM PLATED WIRE MAGNETOSTRICTIVE TRANSDUCER

Vahram S. Kardashian, Plymouth Village; Richard B. Fryer, and James O. Holmen, both of Minnetonka, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

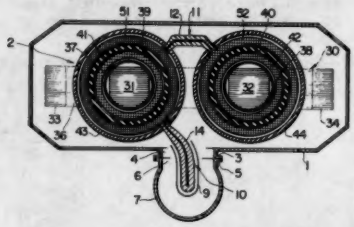
Filed Dec. 1, 1972, Ser. No. 311,209
Int. Cl. H01f *21/00*
U.S. Cl. 336—20 **4 Claims**



A magnetostrictive anisotropic thin film plated wire transducer for measurement of deformation of an plastic medium. A length of magnetostrictive plated wire is strung back-and-forth across a transducer framework, the magnetostrictive wire being sensitive to stress and strain. The transducer detects deformation of a surface or a structure generated by external changes in pressure on that surface or structure. The deforming surface either directly induces a stress in the mag-

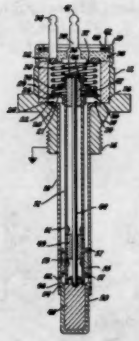
netrostrictive plated wire transducer or induces a stress on it via an intermediate medium such as a fluid.

3,774,135
STATIONARY INDUCTION APPARATUS
Yoshitake Kashima, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan
Claims priority, application Japan, Dec. 23, 1971, 46/104972; June 14, 1972, 47/58578
Filed Dec. 21, 1972, Ser. No. 317,301
Int. Cl. H01f *15/04, 27/28*
U.S. Cl. 336—84 14 Claims



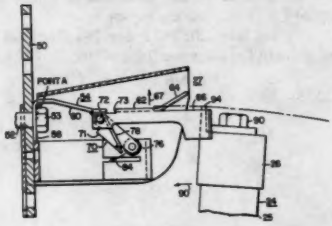
When three single-phase transformers are connected to form a 3-phase bank serving as a super-high-voltage power transformer, each of the windings of each single-phase transformer is divided into at least two winding sections wound separately around different core legs, and a lead-out conductor from the high-voltage end of one of the two winding sections is extended along the periphery of the other winding section and combined at a predetermined point on the periphery with another lead-out conductor from the high-voltage end of the other winding section so that both the lead-out conductor may be connected together with an external terminal.

3,774,136
TEMPERATURE RESPONSIVE SWITCH
Donald J. Zelenka, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 4, 1972, Ser. No. 311,515
Int. Cl. H01h *37/46*
U.S. Cl. 337—382 4 Claims



This invention relates to a switch and more particularly to a temperature responsive switch used in a catalytic converter generally found in internal combustion engine exhaust systems. The temperature switch is an independent self-contained unit that is mounted directly on the converter and has a sensing element that extends into the converter to activate switch contacts to provide an initial warning as well as a second warning that the catalyst within the converter may become ineffective due to deterioration of the catalyst, and therefore maintenance of the converter is required.

3,774,137
LATCH AND GUIDE ASSEMBLY FOR A DROPOUT ELECTRICAL FUSE
John W. Carothers, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Sept. 22, 1972, Ser. No. 291,467
Int. Cl. H01h *71/10*
U.S. Cl. 337—174 9 Claims

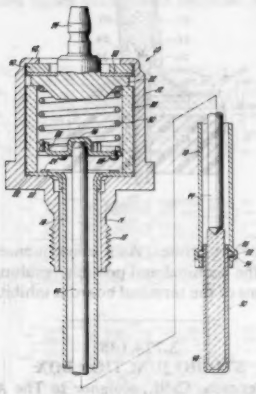


A fuse assembly including a pivotally mounted fuse holder having a fusible element disposed therein. The fuse assembly is of the dropout type and adapted for indoor or outdoor use in relatively high voltage circuit applications, such as 34.5 KV. The fuse holder is disposed in the fuse assembly generally vertically with the lower end of the fuse holder being supported by a hinge assembly on which the fuse holder may pivot. The upper end is latched in place by a simplified latch assembly which includes a cantilevered span and locking recess into which a complementary locking and retaining protrusion on the fuse holder may be captured upon the placing of the fuse holder in a normal electrically conductive position. The span is resilient, so as the fuse holder is brought into contact with the latch assembly the span rises vertically under the influence of the previously described protrusion or projection until the protrusion aligns with the recess at which point the recess is lowered onto the top of the fuse so that the recess captures the protrusion. In certain instances, a chargeable kickout spring is disposed on the span so that when the fuse blows the kickout spring will then force upper portions of the fuse holder outwardly away from the upper contact or latch means to a dropout position in which an insulating gap is interposed between the lower and upper contacts of the fuse assembly.

3,774,138
TEMPERATURE RESPONSIVE SWITCH
Donald J. Zelenka, Flushing, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 1, 1972, Ser. No. 311,416
Int. Cl. H01h *37/46*
U.S. Cl. 337—382 4 Claims

This invention relates to a temperature switch and more particularly to a temperature responsive switch used in a catalytic converter that fits into an internal combustion engine exhaust system. The temperature switch is an independent self-

contained unit that is connected directly to the converter and has a sensing element that fits within the converter to activate



the switch to provide a signal and therefore an indication that the catalyst within the converter is ineffective due to deterioration of the catalyst.

3,774,139

WIRE-TYPE SLIDE RESISTOR FOR A SELF-BALANCING INSTRUMENT HAVING CONTACT POSITION REGULATING MEANS

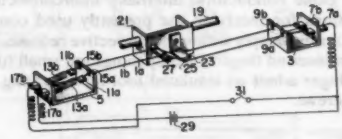
Kozo Kurimoto; Hiroshi Umetsu; Takeo Shoji, all of Katsuta, and Yukio Yoshinari, Naka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 11, 1971, Ser. No. 197,875

Claims priority, application Japan, Dec. 16, 1970, 45/111747

Int. Cl. H01c 5/02

U.S. Cl. 338—74 12 Claims



A slide resistor for a self-balancing instrument including two retainers provided within a frame of the self-balancing instrument, each retainer being provided with two notches. Two wire resistors are stretched between the two retainers, one end of each wire resistor being fastened to one of the two retainers by a conductive terminal engaged to a respective notch, and the other end being fastened to the other retainer through a conductive spring by a conductive terminal engaged to the notch of the other retainer. A slide contact is secured to a movable body and is adapted to slide on the wire resistors, and a roller is provided on the movable body adjacent the slide contact, the roller being provided with two V-shaped grooves to guide the two wire resistors, respectively.

3,774,140

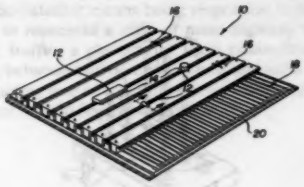
CONNECTORLESS PLUG-IN PRINTED WIRING CARD

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 24, 1972, Ser. No. 300,048

Int. Cl. H05k 1/02

U.S. Cl. 339—17 C 8 Claims



A printed wiring card assembly in which electronic components can be plugged in to mechanically mount and electrically interconnect into the assembly, including a flexible printed wiring sheet held in resilient contact between a component positioner and ridges on a support base. The positioner includes slots and a guide ramp for guiding the component leads insertable between the positioner and conductive connecting portions on the printed wiring sheet. A layer of resilient material on the ridges urges the conductive connecting portions into resilient contact engagement with the component leads.

3,774,141

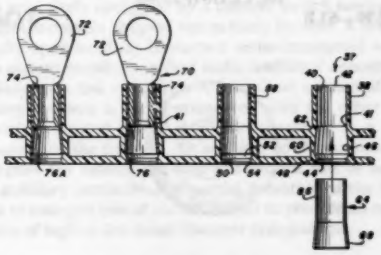
TERMINAL CONNECTOR AND INSULATING SLEEVE THEREFOR

Harry F. Condon, Hillsdale, Mich., assignor to Vaco Products Company, Chicago, Ill.

Filed Nov. 24, 1971, Ser. No. 201,926

Int. Cl. H01r 15/12

U.S. Cl. 339—223 R 20 Claims



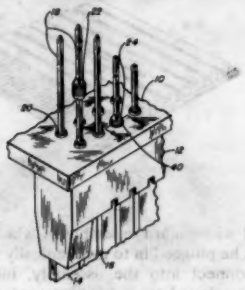
A terminal connector and insulating sleeve therefor in which the internal surface of the insulating sleeve defines a first generally cylindrical portion, a second outwardly tapered flaring portion and a third undercut portion. The connector includes a conductive sleeve having cylindrical and tapered sections corresponding to the first and second portions of the insulating sleeve disposed within the insulating sleeve in surface-to-surface contact with the corresponding surfaces thereof. The barrel of a connecting element is disposed within the assembled sleeves, the free end of which is upset outwardly to retain the components of the assembled terminal connector in place.

3,774,142

SLEEVE FOR GROUNDING BUSHING-MOUNTED CONTACT TO PLATE

Frederick J. Siegler, Santa Monica, Calif., assignor to Elco Corporation, Willow Grove, Pa.

Filed May 10, 1972, Ser. No. 252,074
Int. Cl. H01r 3/06
U.S. Cl. 339—14 R **10 Claims**



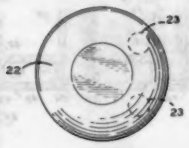
In an electrical interconnection assembly of the type which comprises a conductive plate having elongated contacts mounted in respective apertures thereof by means of respective thermoplastic insulating bushings, a removable sleeve is provided for grounding any contact to said plate without damaging the plate, the bushing, or the contact. The sleeve comprises a cylindrical member having a sharpened lead-in edge at a first end, a fluted body portion, and at the other end, a plurality of arcuate fingers shaped to grip said contact when said sleeve is inserted thereover. To ground any contact, the sleeve is slipped over the contact, first end downward, and the lead-in portion is driven between the plate and bushing such that the fluted body portion makes a good connection with the plate and the gripping fingers make a good connection with the contact.

3,774,143

ELECTRICAL ADAPTOR

Michael Lopin, 395 Broadway, Cambridge, Mass.

Filed June 9, 1972, Ser. No. 261,263
Int. Cl. H01r 13/48
U.S. Cl. 339—61 R **3 Claims**



An adaptor for use in making an electrical connection between an electrode and a cable connected to a monitoring instrument.

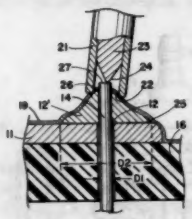
3,774,144

NON-DESTRUCTIVE TROUBLE SHOOTING PROBE

Robert Eartis Jackson, Venice, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed May 19, 1972, Ser. No. 254,900
Int. Cl. H01r 11/18, 11/20
U.S. Cl. 339—97 T **1 Claim**

A probe includes an open ended conducting tube having a sharp conducting point recessed in the end of the tube such that an annular contact by the tube is made with the normal solder hump on a terminal board rather than a point contact as



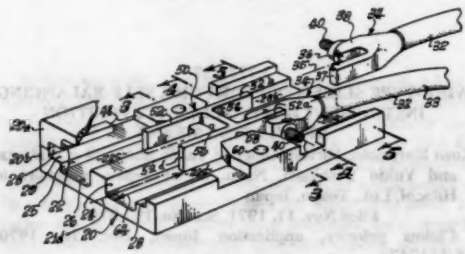
occurs with prior art probes. As a consequence, slippage of the probe from the terminal and possible resulting destruction of certain portions of the terminal board is inhibited.

3,774,145

STUDIO JUNCTION BOX

Petro Vlahos, Tarzana, Calif., assignor to The Association of Motion Picture and Television Producers, Inc., Hollywood, Calif.

Filed Oct. 19, 1972, Ser. No. 299,154
Int. Cl. H01r 9/00
U.S. Cl. 339—198 H **5 Claims**



Each junction box assembly comprises a portable stack of rigidly assembled housing units, one for each cable conductor, typically molded of plastic with individual recesses for the respective cable conductors. Internally interconnected busbar formations for receiving the presently used connection lugs are mounted deeply within the respective recesses beyond reach of an inserted finger. Side openings too small for insertion of a finger admit an insulated tool for operating the lug clamping screws.

3,774,146

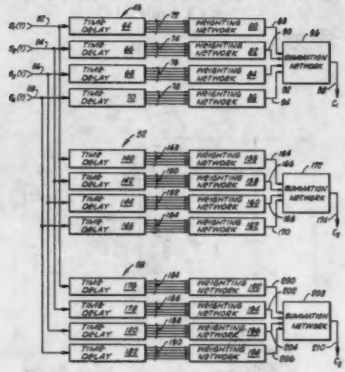
METHOD AND APPARATUS FOR ELECTRIC SIGNAL PATTERN DISCRIMINATION

Pierre L. Goupillaud, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of Ser. No. 848,777, Aug. 11, 1969, Pat. No. 3,652,980. This application Mar. 23, 1972, Ser. No. 237,298
Int. Cl. G01v 1/30
U.S. Cl. 340—15.5 SC **4 Claims**

A method for extracting predetermined types of electrical signal data from an overall composite of time analog signal input information, the method consisting of constructing an ideal filter for each of selected electrical signal components of an input signal group, such filter construction being carried out by determining the pseudo-inverse or generalized inverse

of a polynomial matrix as determined for the particular input signals to be examined, with application of the polynomial matrix for preadjustment of a multichannel pattern discriminating filter which, when energized by the input signals under examination, will produce separately the requisite selected electrical signal component outputs. Apparatus for



carrying out the method may consist of plural channels of time domain filters connected in series with a weighting device for convolving input electrical signals; each of the convolution filters is adjusted to function at predetermined times and amplitudes in accordance with the matrix function or operator determined for selected signal component functions of a particular set of input electrical signals.

3,774,147

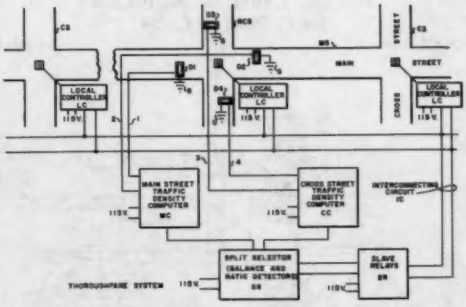
TRAFFIC CYCLE SPLIT SELECTORS

George Donald Hendricks, Davenport, Iowa, assignor to Gulf & Western Industries, New York, N.Y.

Continuation of Ser. No. 343,182, Feb. 3, 1964, abandoned, which is a continuation of Ser. No. 742,160, June 16, 1958, abandoned. This application Feb. 10, 1966, Ser. No. 534,603

Int. Cl. G08j *1/00*

U.S. Cl. 340—35 **10 Claims**



1. In a traffic cycle split control system for two intersecting highways, traffic detector means for said highways for detecting the passage of substantially all vehicular traffic thereon, main highway traffic density computer means to which all said detector means for the main highway are connected, cross highway traffic density computer means to which all said detector means for the cross highway are connected, the outputs of said computer means being proportional to traffic density on their respective highways, balance detector means for receiving and comparing the outputs of said computer means to determine the higher output, a plurality of adjustable impedances, a plurality of ratio detector means connected to said impedances, said balance detector means applying the higher output of said computer means through said impedances to said plurality of ratio detector means, said balance detector means applying the lower output of said computer means directly to said ratio detector means, said plurality of ratio detector means being responsive to said computer outputs to represent a ratio of main highway traffic to cross highway traffic, a plurality of local controllers, and a control circuit between said controllers and said ratio detector means for actuating one of a group of presettable traffic cycle splits dependent on said represented ratio.

3,774,148

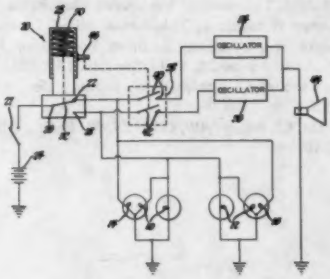
AUDIO MONITORED VEHICLE HEADLIGHT CIRCUIT

Duane E. McIntosh, Palmyra, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 16, 1972, Ser. No. 297,918

Int. Cl. B60q *1/14*

U.S. Cl. 340—52 R **2 Claims**



A vehicle headlight circuit including high and low beam filaments selectively energized by a dimmer switch having a pair of output terminals coupled respectively thereto. A first set of normally open auxiliary contacts is series connected with one of the output terminals, a first audio oscillator operating at a first frequency and a speaker. A second set of normally open auxiliary contacts is series connected with the other output terminal, a second audio oscillator operating at a second frequency and the speaker. An actuator on the dimmer switch is effective for closing the first and second sets of normally open auxiliary contacts upon partial actuation of the dimmer switch to energize one of the oscillators to provide an audio indication of high or low beam filament energization.

3,774,149

ELECTRICAL GUIDE FOR VEHICLE TRAILER HITCH

Doyne R. Bennett, 5114 Kickapoo Dr., Kokomo, Ind.

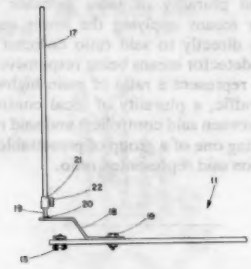
Filed Sept. 7, 1972, Ser. No. 287,090

Int. Cl. B60q *1/00*

U.S. Cl. 340—52 R **6 Claims**

A guide mountable to a vehicle trailer hitch for indicating via an electrical light the proximity of the trailer with respect to the vehicle. A first rod is mounted to the vehicle second with an electrical light mounted to the top of the rod. The light

is connected via an electrical switch mounted to the rod to a source of electrical energy. A wire spring mounted to the rod



is engageable with the electrical switch when contacted and moved by a s econd rod mounted to the trailer.

3,774,150

MOTOR VEHICLE SAFETY DEVICE

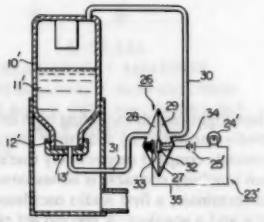
Shunji Matsui, Yokohama; Yoshikazu Hayakawa, Yokosuka, and Kenzo Hirashima, Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed June 28, 1971, Ser. No. 157,403

Claims priority, application Japan, Dec. 22, 1970, 45/115393

Int. Cl. B60q *1/00*; **G13f** *23/00*; **B60r** *21/08*

U.S. Cl. 340—60 **3 Claims**



An air bag type safety device having an alarm device that indicates when the weight of the air bag operating incombustible liquid substance such as "Freon" is below a predetermined value below which the air bag fails to be properly expanded so as to reliably protect the vehicle occupants from injury resulting from a collision. The device comprises two pressure-sensors, one for sensing a vapor pressure present within a container for the substance and the other for sensing the sum of the vapor pressure and a pressure corresponding to the wieght of the substance. A differential pressure detector is provided for detecting a pressure differential between the vapor pressure and the pressure sum, that is equal to the pressure corresponding to the weight of the substance. When the weight of the substance is below the predetermined value, an alarm lamp is lighted to indicate ineffectiveness of the air bag type safety device.

3,774,151

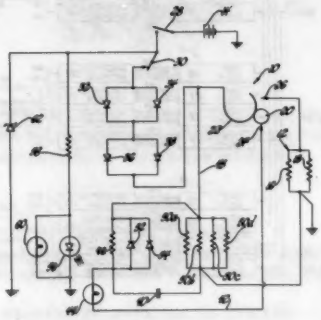
DIAGNOSTIC FIRING CIRCUIT ADAPTED FOR USE WITH INFLATABLE RESTRAINT SYSTEMS IN VEHICLES

Donald J. Lewis, Troy, and Charles J. McMillin, Fraser, both of Mich., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 2, 1971, Ser. No. 177,559

Int. Cl. B60r *21/00*

U.S. Cl. 340—61 **11 Claims**



An electric circuit assembly for transmitting a signal to initiate the inflation of a gas bag safety assembly in an automobile when the vehicle is involved in a collision. The circuit assembly is provided with diagnostic means to allow the driver to monitor the readiness of the circuit for operation and detect any malfunction in the assembly. Upon start-up of the vehicle, indicator means in the circuit assembly, in the form of a pair of warning lamps, indicates whether the circuit assembly is operating normally. One of the lamps is normally lit for a short period after the ignition switch is closed. The other lamp only becomes lit when the first lamp fails to light. The circuit is formed so as to operate properly despite the failure of various of its components.

3,774,152

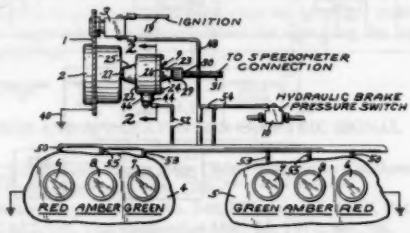
SPEED CONTROLLED TAILLIGHT SYSTEM FOR A VEHICLE

Jack W. Tandy, Mcleod Island S-S #61, Livingston, Mont.

Filed Nov. 1, 1971, Ser. No. 194,264

Int. Cl. B60q *1/44*, *1/54*

U.S. Cl. 340—62 **3 Claims**



A pair of groups of taillights for a vehicle for indicating to the driver of a following vehicle the condition of driving operation of the vehicle equipped with the groups of taillights. The lights of each group are of different colors and a switching arrangement, including speed responsive control switch

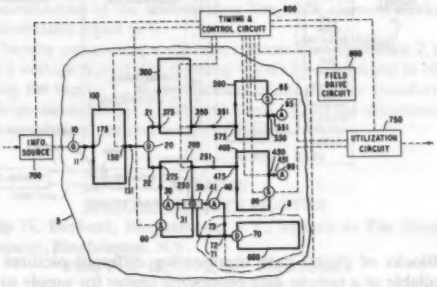
means and brake operated switch means, are utilized to provide color combinations and color changes to indicate driving conditions of the vehicle, to the following driver.

3,774,153

FIELD-ACCESSED, SINGLE-WALL DOMAIN APPARATUS UTILIZING INTERACTING SHIFT REGISTER LOOPS

Syed Vickar Ahamed, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 9, 1971, Ser. No. 196,995
Int. Cl. G06f *11/12*
U.S. Cl. 340—146.1 AL **11 Claims**



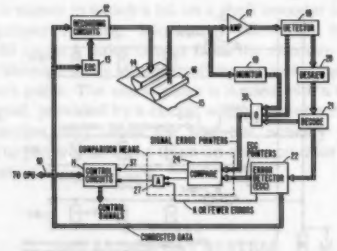
Magnetic domain apparatus, for performing binary division and other coding operations of a cyclic nature upon binary information words that are represented by patterns of single-wall domains, are provided. Selected elements in the apparatus are configured to define pluralities of intersecting, closed-loop, domain propagation channels of different propagation path lengths, which are arranged to provided predetermined logical interactions between patterns of domains circulating in the loops in response to a common, reorienting magnetic field.

3,774,154

ERROR CONTROL CIRCUITS AND METHODS

Ernest W. Devore, Boulder, and Phil H. Hall, Longmont, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 21, 1972, Ser. No. 282,619
Int. Cl. G06k *5/02*; G11b *27/36*; G11c *29/00*
U.S. Cl. 340—146.1 F **10 Claims**



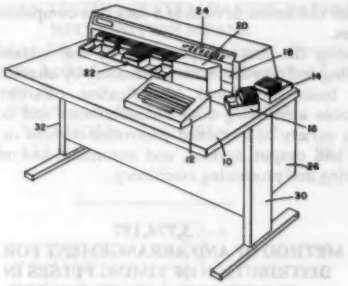
A digital magnetic recording system or a signal transmission system employs an error detection and correction code capable of correcting k+n error conditions (k and n are positive integers) whenever quality signals point to an error-prone condition. Such error correction code can detect and correct k errors without pointers in a given set of data signals. At the transmitter, or during a recording operation, the recording of signal transfer is monitored. In addition, signals are recovered and processed through error detection and correction circuits for pointing to said k error conditions. Such k error conditions are then compared with the error-prone condition signals. An okay signal is provided if there are no errors or if there are k error conditions wherein the error locations within a set of data signals are pointed to both by the error-prone condition signals and the error correction code. An error condition exists if there are k+n (k=1 or more) or more errors or if the comparison for k error conditions is not met.

3,774,155

INTERPRETIVE DATA RECORDER WITH SORT CAPABILITY

Frank H. McPherson, Rosemont; Irvin S. Lownes, Jr., Norristown, and Thomas L. Richardson, Horsham, all of Pa., assignors to Decision Data Computer Corporation, Warminster, Pa.

Continuation-in-part of Ser. No. 81,250, Oct. 16, 1970, Pat. No. 3,706,074.
Filed May 17, 1971, Ser. No. 144,075
Int. Cl. B06F *7/10*; G06f *7/06*
U.S. Cl. 340—172.5 **8 Claims**



An interpretive data recorder with sort capability which represents the first punch card machine capable of performing all of the required data preparation, auxiliary and peripheral input-output operations necessary for complete transaction and master file processing for conventional file updating and maintenance in data processing applications.

3,774,156

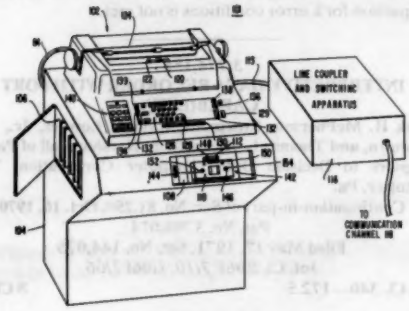
MAGNETIC TAPE DATA SYSTEM

Joseph P. Marsalka, Columbus, and Charles F. Spademan, Worthington, both of Ohio, assignors to MI2, Inc., Columbus, Ohio

Filed Mar. 11, 1971, Ser. No. 123,187
Int. Cl. G06f *3/00*, *5/04*, *5/06*
U.S. Cl. 340—172.5 **103 Claims**

There is disclosed a data handling system including input-output means, intermediate memory means and principal memory means, together with data transfer and processing control logic. Input and output parallel to serial and serial to parallel and code conversion capability are provided. Input-output temporary storage capability is provided by a shift register. The intermediate memory is a random access memory or the like having a storage capacity substantially exceeding that of the input-output shift register. The principal memory is a magnetic tape system, preferably employing a magnetic tape cassette as a memory medium. The system is useable in various ways, for example as a data terminal capable of local keyboard and/or remotely controlled data storage and transmission. Data input and output may be in parallel or serial form and a variety of data rates and data code word may be accommodated without system modification.

Broadly stated, for operation in the record mode, the system accumulates a block of data provided by a data source (for example a line of print) in the intermediate memory through the input-output means, and thereafter transfers the entire data block to the principal memory at a high speed. For playback, an entire block of data is transferred at high speed from the principal memory into the intermediate memory and is thereafter provided through the input-output means to suitable data utilization devices at a data rate compatible with such devices.



Among the features provided by the system are error checking and correction on a character-by-character and data block basis, data block identification (search) based on selectable identifying code characteristics and compatibility with a variety of keyboard controlled devices or other data input and output devices, and automatic and manual data gathering and processing machinery.

3,774,157

METHOD OF AND ARRANGEMENT FOR THE DISTRIBUTION OF TIMING PULSES IN AN ELECTRONIC DATA PROCESSOR

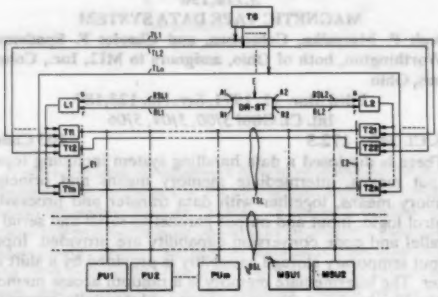
Frank Tsui, Boeblingen, Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1971, Ser. No. 202,450

Claims priority, application Germany, Jan. 30, 1971, P 21 04 427.9

Int. Cl. G06f 5/06

U.S. Cl. 340—172.5 **3 Claims**



This specification describes a system for distributing timing pulses in an electronic data processor which minimizes differences in propagation time delays between timing pulses in a timing bus system and data pulses in a data bus system. The system involves first determining the direction of transmission of the data pulses and thereafter transmitting the timing pulses in the same direction.

3,774,158

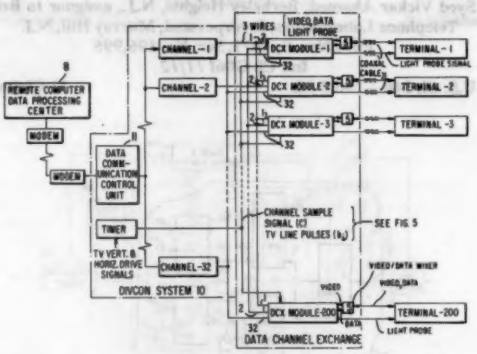
MULTIPLE TERMINAL DISPLAY SYSTEM

Robert John Clark, Dorion, Canada, assignor to RCA Corporation, New York, N.Y.

Filed Jan. 6, 1972, Ser. No. 215,817

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5 **7 Claims**



Blocks of digital data representing different pictures are available at a remote data processing center for supply to the control channels of a DIVCON system. Each channel includes a refresh memory for storing a block of digital data and circuits for translating the stored data to a frame of video signals but there are substantially fewer channels than display terminals. In response to a request for service by a terminal, a data channel exchange hunts for a "not busy" control channel and when it finds one, connects the channel to the terminal. The terminal may then communicate with the remote data processing center both for receiving data via the channel's refresh memory for display on the terminal and for sending data to the remote data processing center also via the channel's refresh memory.

3,774,159

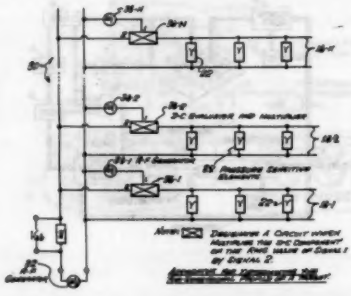
APPARATUS AND METHOD FOR DETERMINING THE PROFILE OF AN UNDERWATER TARGET

Alan Gordon, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 24, 1972, Ser. No. 309,581

Int. Cl. G01s 9/66

U.S. Cl. 340—3 R **8 Claims**



Apparatus for determining the spatial Fourier transform of an arbitrary pressure field $p(x)$, and therefore the acoustic profile of an underwater target upon which an acoustic signal

has been made to impinge, by an analysis of the Fourier transform of the reflected acoustic signal detected at uniformly spaced underwater detecting points located in the analyzing plane. The apparatus comprises a radio-frequency generator, which generates a frequency ω_{RF}, and which has an active and neutral connection. A two-conductor transmission line, having a characteristic impedance of Z_o, has one conductor connected to the neutral connection of the r-f generator. An impedance Z, where $Z << Z_o$ than the input impedance of the line, has two terminals, one terminal being connected to the active connection of the r-f generator, and the other terminal being connected to the other conductor of the r-f transmission line. A plurality of pressure-sensitive elements, which comprise the uniformly-spaced underwater detecting points for the detection of the reflected acoustic energy, are connected across the two conductors of the transmission line, each element having an admittance equal to Y.

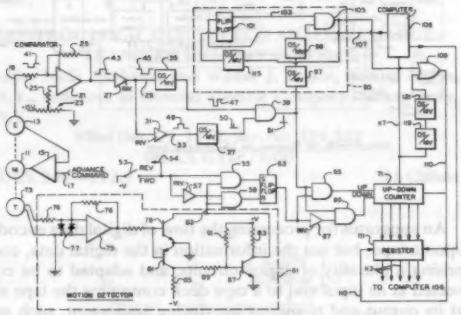
Whereby connecting a voltmeter across the impedance Z to read a voltage $V_Z(\omega)$ and dividing $V_Z(\omega)$ by ω_{RF} results in obtaining the $\omega_{RF}\sqrt{L_o C_o}$ component of the Fourier transform of the pressure field $p(x)$, where L_o and C_o are the inductance and capacitance per unit length of the line.

3,774,160

DIGITAL FRAME COUNTER

Philip G. Barboni, Binghamton, N.Y., assigno to The Singer Company, Binghamton, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,434
Int. Cl. G03b *21/46*
U.S. Cl. 340—172.5 **11 Claims**



A frame counter for use in a projector having a high speed pulldown is shown in which a bit on a shaft encoder is used to indicate proper framing. Movement from one frame to another will cause a pulse output from the encoder which is processed through delay circuits to filter out noise and to provide a count pulse. The count pulse is Anded with a forward-reverse signal, provided by a circuit which insures a change in count direction only when the film has actually reversed direction, to provide an input to an up down counter wherein the cumulative count is stored.

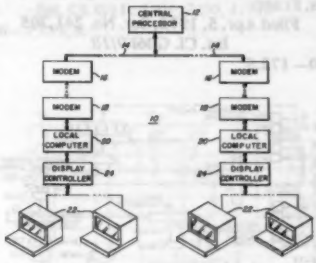
3,774,161

VISUAL DISPLAY SYSTEM

Derek Chambers, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 14, 1971, Ser. No. 143,343
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **11 Claims**

An enhanced alphanumeric character display system in which a raster scan dot matrix is generated at a plurality of display locations with local computer control over local groups of displays is disclosed. Data from the generation of an individual dot matrix characters is locally stored in a recirculating register independently from a random access refresh



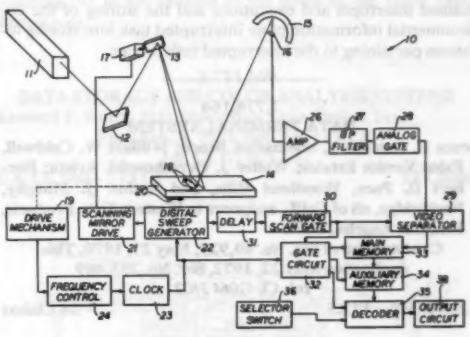
memory thereby removing the recirculation function from the refresh memory. A technique for shifting selected dots in the character matrix to obtain improved characters is also disclosed.

3,774,162

LASER SCAN TESTING SYSTEM HAVING PATTERN RECOGNITION MEANS

John J. Flaherty, Elk Grove Village, and Eric J. Strauts, Harwood Heights, both of Ill., assignors to Magnaflux Corporation, Chicago, Ill.

Filed Mar. 1, 1972, Ser. No. 230,713
Int. Cl. G11c *19/00*; G01m *11/08*
U.S. Cl. 340—172.5 **26 Claims**

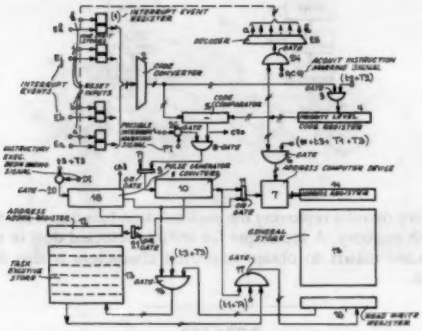


Non-destructive testing system in which a laser beam is impinged on an oscillating mirror to produce on a surface of a part a scanning spot moved in forward and reverse scan directions while the part is moved in a transverse direction. Photocell means respond to light from the surface of the part to develop defect-indicating information signals which are applied through band-pass filter and analog gate means to a main memory comprising a plurality of serially connected LSI shift-register units, the outputs of which are applied to shift-register sections of an auxiliary memory, each section comprising a plurality of stages. The stages of the auxiliary memory are connected to decoder circuitry including parallel to serial converters and pre-settable counter, to develop output signals in response to predetermined patterns. Clock signals for the memory are also applied to a sweep generator which generates a staircase signal applied to a drive system for the oscillating mirror.

3,774,163
HIERARCHIZED PRIORITY TASK CHAINING APPARATUS IN INFORMATION PROCESSING SYSTEMS

Alice Maria Recoque, Chatenet-Malabry, France, assignor to Compagnie Internationale Pour L Informatique, Louveciennes, France

Filed Apr. 5, 1972, Ser. No. 241,205
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 6 Claims

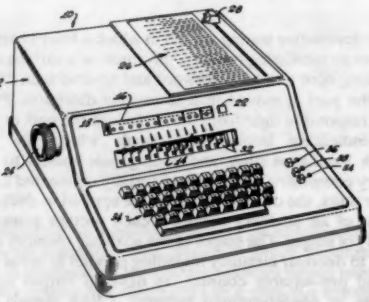


In an information processing system adapted to perform a plurality of tasks of hierarchized priorities, a task is interrupted when another task of higher priority is initiated and cascaded interruptions of this kind normally occur. Each time a task is interrupted, its environmental information must be preserved. In order to avoid time-consuming and complex environmental information exchanges from task to task in such cascaded interruptions, an task chaining apparatus ensures a permanent search of the hierarchized priority tasks for chained interrupts and executions and the storing of the environmental information of an interrupted task into storing locations pertaining to the interrupted task proper.

3,774,164
DATA TERMINAL SYSTEM

Bruce H. Osterberg, Manhattan Beach; William W. Caldwell, Palos Verdes Estates; Walter J. Orzechowski, Arleta; Herbert D. Pace, Woodland Hills, and Arthur J. Murphy, Northridge, all of Calif., assignors to Western Data Products, Inc., Los Angeles, Calif.

Continuation of Ser. No. 40,929, May 27, 1970. This application May 22, 1972, Ser. No. 255,469
Int. Cl. G06f 3/02
U.S. Cl. 340—172.5 16 Claims

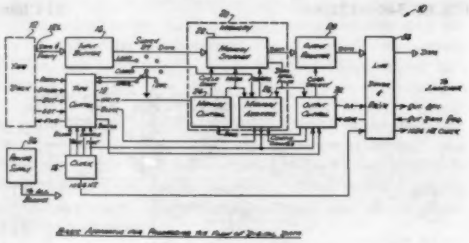


Apparatus and method for generating and assembling data in a particular format in a remote data terminal and, thereafter, transmitting the data to a central computer. Data is assembled in fields of predetermined length on a plurality of multiple position switches with integral visual readouts for visually verifying the data before storage in a local memory in the terminal. The data is stored in response to manual initiation of a storage control sequence. When the data is assembled in the predetermined format, the terminal is connected to the computer over a telephone line through manually initiated automatic dialing, or manual dialing, and, when the computer indicates that it is ready to receive data by means of an audible signal, the data is transmitted to the computer by manual initiation of an output control sequence.

3,774,165
APPARATUS FOR PROCESSING THE FLOW OF DIGITAL DATA

Paul A. McCann, Jr., Temple City, and Walter W. Fisher, Northridge, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 2, 1972, Ser. No. 277,458
Int. Cl. G11b 5/00
U.S. Cl. 340—172.5 5 Claims



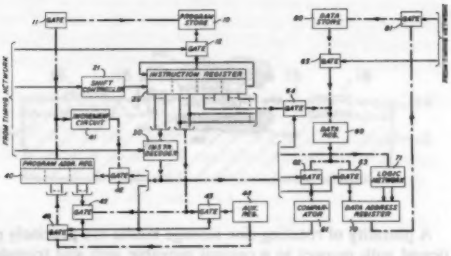
An apparatus for processing the flow of digital data encoded upon a tape, but not the information in the digital data, comprising a plurality of digital circuits, and adapted to be connected at its input end to a tape deck containing the tape and at its output end to output interfacing equipment, such as a servo, comprising a clock source for generating the clocking pulses used to control the timing and sequencing of the operations of the digital circuits, which timing may be different from the rate at which the digital data were encoded upon the tape, and an input buffer, connectable to the tape deck, which receives the digital data from the tape in the tape deck. The apparatus further comprises a tape control, connectable to the tape deck, and whose control inputs are derived from the tape deck, which controls the sequencing of the write-in and read-out of the digital data, and a memory which comprises a memory storage, a memory control, and a memory address. The memory is in the form of a double buffer in that digital data may be simultaneously written into one portion, or buffer, of the memory storage and read out of the other buffer. The apparatus further comprises, an output register for accepting the digital data from the memory, and an output control which generates, as an output signal, a strobe pulse to the memory address, which causes reading out of data from the memory storage and distributing this data into its proper place in the output register. A line driver and receiver whose inputs are (1) digital data from the output register, and (2) an "output acknowledge" signal from the output control, which causes delivery of the digital data to the output interfacing equipment and the outputs of the line driver and receiver, also forms part of the apparatus.

3,774,166

SHORT-RANGE DATA PROCESSING TRANSFERS

Frank S. Vigliante, Piscataway Township, Middlesex County, N.J.

Filed Sept. 30, 1963, Ser. No. 312,442
Int. Cl. G11c 7/00
U.S. Cl. 340—172.5 13 Claims



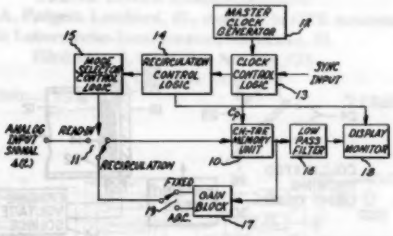
A method of, and apparatus for, transferring control of a data processor to an instruction in nonequential memory location is disclosed. The transfer instruction has an operand that is only a fraction of the length of a full memory address. When the instruction is executed, its fractional length operand is gated into the program address register replacing an equivalent portion of the contents of that register.

3,774,167

CONTROL LOGIC CIRCUIT FOR ANALOG CHARGE-TRANSFER MEMORY SYSTEMS

Charles McD. Puckette, and Walter J. Butler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,352
Int. Cl. G11c 19/00
U.S. Cl. 340—172.5 11 Claims



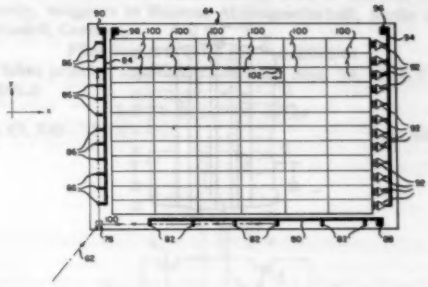
The operation of analog memory systems utilizing semiconductor charge-transfer devices is controlled by a control logic circuit including clock control logic, recirculation control logic and mode selector control logic. The clock control logic includes a first switch for selecting the repetition rate of bursts of clock pulses which read the analog input information signal into the memory unit of the system and a second switch for selecting the number of clock pulses in the burst. The recirculation control logic includes a switch for obtaining recirculation of the stored information and selecting the number of recirculations between successive read-ins of new analog information. The mode selector control logic determines the mode (read-in or recirculate) of operation of the memory system.

3,774,168

MEMORY WITH SELF-CLOCKING BEAM ACCESS

Tuh-Kai Koo, and Kent R. McCune, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 3, 1970, Ser. No. 60,415
Int. Cl. G11c 5/04, 7/00, 11/30
U.S. Cl. 340—173 CR 12 Claims



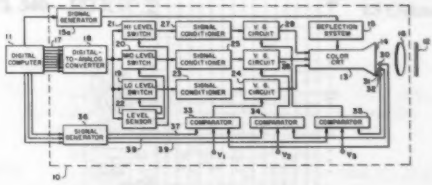
There is described a beam accessed metal-oxide semiconductor memory into which binary information can be written and stored and from which that information can be read or erased. The writing, reading, or erasing is accomplished by causing an electron beam of either a high or a low intensity to scan across the gate or drain electrodes of the memory elements while simultaneously applying either a read, a write, or an erase voltage to the gate electrode thereof. There is also described means for controlling the beam position in a self-clocking manner. This is accomplished by providing metal indexing strips along the path which the beam travels and then counting the pulses created in the strips as the beam scans thereacross.

3,774,169

DATA STORAGE AND COLOR ANALYSIS SYSTEMS

Kenneth F. Smith, 3241 Flowerdale Lane, Dallas, Tex.

Filed Feb. 8, 1971, Ser. No. 113,271
Int. Cl. G11c 11/42
U.S. Cl. 340—173 LT 12 Claims



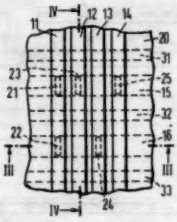
A digital-to-analog converter mechanism converts multiple-bit digital data bytes into single-bit analog bytes which control the color and intensity of light produced at different elemental locations on the display screen of a color cathode-ray tube. The display screen image is recorded on color photographic film. Readout of the recorded film data is accomplished by scanning the color film with a beam of white light and using a set of photomultiplier tubes with color-selective filters to reconstruct replicas of the original analog signals. These analog signals are supplied to an analog-to-digital converter mechanism to reconstruct replicas of the original multiple-bit digital data bytes. The basic readout apparatus is also useful as a color analyzer for analyzing plural-color specimens of different substances.

3,774,170

FIXED DATA MEMORY UTILIZING SCHOTTKY DIODES

Sigurd Koch, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 28, 1971, Ser. No. 138,186
Claims priority, application Germany, May 11, 1970, P 20 22 918.9
Int. Cl. G11c *17/00, 11/36*
U.S. Cl. 340—173 SP 4 Claims



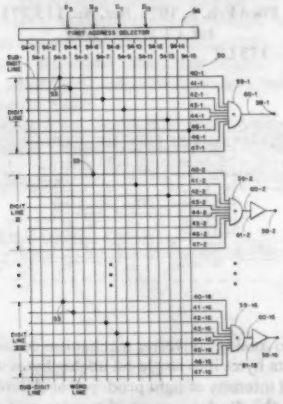
A fixed data memory utilizes Schottky diodes. The cathodes of the diodes are guided together, for one row or column, over a buried layer.

3,774,171

READ ONLY MEMORY ORGANIZATION

William M. Regitz, Cupertino, Calif., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Nov. 8, 1971, Ser. No. 196,304
Int. Cl. G11c *11/36, 17/00*
U.S. Cl. 340—173 SP 8 Claims



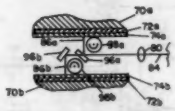
A read only memory is provided which minimizes the number of solid state elements required by having these elements represent the fewer number of binary states in each digit line. Inverter means are also provided to ensure a consistent representation to the output of the read only memory plane. A further feature completely eliminates the solid state elements by substituting a plurality of digit lines and solid interconnections for the solid elements previously required. The invention may be utilized in a recognition system having a multisignal address and a plurality of memory planes.

3,774,172

RANDOM ACCESS MULTIPLE DISC OPTICAL INFORMATION STORAGE SYSTEM

Daniel Silverman, 5969 S. Birmingham, Tulsa, Okla.

Continuation of Ser. No. 888,461, Dec. 29, 1969, abandoned.
This application Mar. 23, 1972, Ser. No. 237,571
Int. Cl. G11c *5/04, 13/04*
U.S. Cl. 340—173 LM 11 Claims



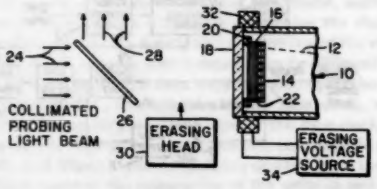
A plurality of rotating disc storage media are precisely positioned with respect to a central movable arm and transducer such that the transducer can be selectively and sequentially positioned to a desired track on a desired disc in the group of discs. A second group of discs, positioned on the same rotators as the first group are contacted by a second arm and transducer. The first transducer can be reading or writing on a disc in the first group while the second transducer is being positioned to a desired track on a desired disc in the second group. Thus the time required to move the transducer is not lost since another transducer is reading or writing simultaneously. This storage is particularly adapted for high packing density optical storage means whereby a very large storage volume can be rapidly accessed on a random basis.

3,774,173

PHOTOCHROMIC FIBER OPTIC PLATE

Roy E. Love, and Ralph A. Westwig, both of Corning, N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 180,364, Sept. 14, 1971, Pat. No. 3,715,150. This application Sept. 20, 1972, Ser. No. 290,727
Int. Cl. G11c *11/30, 13/04*
U.S. Cl. 340—173 CR 10 Claims



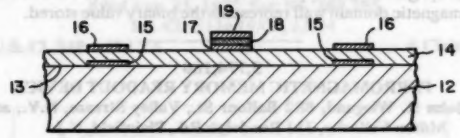
Disclosed is an optical image storage system of the type utilizing a photochromic fiber optic image storage plate and an apparatus for rapidly bleaching information stored in the storage plate. In addition to the usual multiplicity of optical fibers containing photochromic material, the image storage plate also comprises a plurality of conductive fibers disposed parallel to the optical fibers. Means such as an induction coil disposed around the image storage plate or transparent electroconductive electrodes disposed on opposite faces of the image storage plate are provided for causing current flow in the conductive fibers to generate heat therein, thereby bleaching or erasing information contained in the image storage plate.

3,774,174

POLARIZATION AND OPTICAL SWITCHING OF QUADRISTABLE FERROELECTRIC FILMS BY SINGULAR ELECTRODES

Maurice H. Francombe, 2600 Hollywood Dr.; Shu Y. Wu, 1115 Graham Blvd., and William J. Takei, 140 Calmont Dr., all of Pittsburgh, Pa.

Filed Aug. 10, 1972, Ser. No. 279,568
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 9 Claims



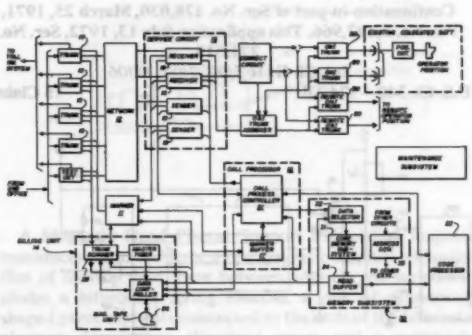
A quadristable ferroelectric device comprises a ferroelectric material with at least two independently reversible polarization components and single-crystal domains. At least one set of electrodes are positioned to apply electric fields to single-crystal domains of the ferroelectric material at such angle to said reversible polarization components that a first electric field can ferroelectrically polarize and repolarize both said reversible polarization components and a second electric field can reverse one said reversible polarization component without reversing the other said reversible polarization component. Preferably, the ferroelectric material of the quadristable ferroelectric device is (010) crystallographically oriented bismuth titanate and the angle of the set of electrodes is between about 30° and 60° and most desirably between about 40° and 50° to the *a* and *c* crystallographic axes of the single-crystal domains. Further, it is preferable that each set of electrodes comprise three elongated electrodes parallel to and spaced apart from each other with the driving potential to apply the electric field applied at either the center or the pair of outer electrodes.

3,774,175

TRUNK TIMER ARRANGEMENT

Richard A. Padgett, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 5, 1972, Ser. No. 286,525
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R 7 Claims



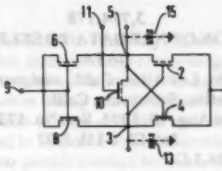
A trunk timer for timing both answer timing and forced disconnect timing, wherein the counting rate during forced disconnect timing is at a different counting rate. Each trunk has its own individual trunk timer, in its assigned memory word.

3,774,176

SEMICONDUCTOR MEMORY HAVING SINGLE TRANSISTOR STORAGE ELEMENTS AND A FLIP-FLOP CIRCUIT FOR THE EVALUATION AND REGENERATION OF INFORMATION

Karl-Ulrich Stein, and Aarne Sihling, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Sept. 11, 1972, Ser. No. 288,044
Claims priority, application Germany, Sept. 30, 1971, P 21 48 896.0
Int. Cl. G11c *7/00, 11/24*
U.S. Cl. 340—173 R 12 Claims



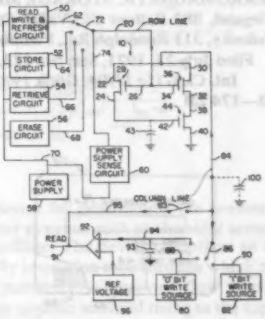
A dynamic semiconductor memory having a plurality of single transistor storage elements connected to a digit line and respective selection lines, an evaluation and regeneration circuit including a flip-flop having a pair of input/output points, each of the points connected to one of the digit lines, and means connecting the points including a controllable semiconductor switch operable to place the points at equal potentials prior to reading from a selected storage element.

3,774,177

NONVOLATILE RANDOM ACCESS MEMORY CELL USING AN ALTERABLE THRESHOLD FIELD EFFECT WRITE TRANSISTOR

Albert M. Schaffer, Dayton, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 16, 1972, Ser. No. 297,962
Int. Cl. G11c *11/24, 11/40*
U.S. Cl. 340—173 R 13 Claims



The present invention relates to a nonvolatile random access memory cell having a fixed threshold field effect read transistor, a fixed threshold field effect storage transistor and an alterable threshold field effect write transistor in it. The

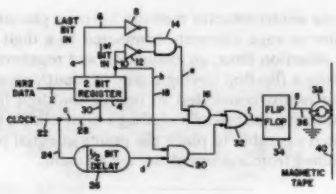
source electrode of the read transistor is connected to the drain electrode of the storage transistor to sense when the latter transistor is holding a volatile charge on its gate electrode, and the gate electrode of the read transistor and the gate electrode of the write transistor are connected together to consolidate read and write select lines. The drain electrodes of the read transistor and the write transistor are connected together to consolidate read and write lines. The source electrode of the write transistor and the gate electrode of the read transistor are connected together to allow for storage of information on the gate electrode of the latter transistor through the former transistor and to allow for nonvolatile storage into the former transistor of the volatile information in the latter transistor by channel shielding as power is lost to the cell. Storage means is connected to the gate electrode of the write transistor to non-volatilely store the volatile information which is held as a charge or no charge on the gate electrode of the storage transistor, as power is removed from the nonvolatile random access memory cell.

3,774,178

CONVERSION OF NRZ DATA TO SELF-CLOCKING DATA

Delmar E. Curtis, Los Altos, Calif., assignor to International Video Corporation, Sunnyvale, Calif.

Filed Aug. 18, 1971, Ser. No. 172,648
Int. Cl. G11b 5/02
U.S. Cl. 340—174.1 G **11 Claims**



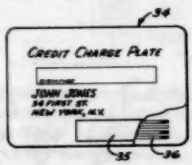
An improved digital encoder and decoder for high density magnetic recording. An NRZ code and clock are combined in a single encoded signal to provide a Pouliart code. The encoder provides a simple straightforward encoding logic; the decoder includes an analog slope detector/comparator to detect flux transitions and means to correct an erroneous clock synchronization.

3,774,179

FERROMAGNETIC STORAGE MEDIUM

John R. Wiegand, 882 Balfour St., Valley Stream, N.Y., and Milton Velinsky, 311 Randolph Rd., Plainfield, N.J.

Filed July 22, 1971, Ser. No. 173,706
Int. Cl. G11c 11/04; G06k 19/06
U.S. Cl. 340—174 ZB **7 Claims**



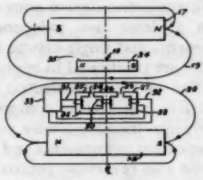
A ferromagnetic storage medium consisting of a plurality of ferromagnetic wires each requiring a greater magentic force for nucleating a magnetic domain wall than is required for propagating a magnetic domain wall along the wire. The uniform effect of an external magnetic field upon the wire is modified so that one end of the wire will nucleate a magnetic domain wall before the other end. The modification is achieved by making one end of the wire of lower magnetic reluctance than the rest of the wire, or by spatially offsetting in an axial direction the midpoint of the wire from the midpoint of the magnetic field. The direction of modification of the wire is chosen in accordance with a binary encoding scheme. In the presence of a sufficient magnetic field, a magnetic domain wall will nucleate at the predetermined end of the wire, in accordance with the modification, and the domain wall will propagate to the opposite end. The direction of travel of the magnetic domain wall represents the binary value stored.

3,774,180

FERROMAGNETIC MEMORY READOUT DEVICE

John R. Wiegand, 882 Balfour St., Valley Stream, N.Y., and Milton Velinsky, 311 Randolph Rd., Plainfield, N.J.

Filed July 22, 1971, Ser. No. 173,708
U.S. Cl. 340—174 SR **19 Claims**



A readout device for decoding the binary value stored in a ferromagnetic wire where the direction of propagation of a nucleated magnetic domain wall is indicative of the binary value stored in the memory. The readout device includes a magnetic source for nucleating a magnetic domain wall at one end of the wire and propagating it to the other end, and a pickup device with a split head arrangement for detecting the direction of propagation.

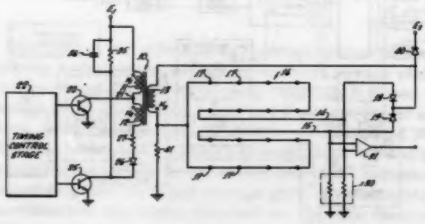
The aforementioned Abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,774,181

CURRENT DRIVER SYSTEM FOR A CORE MEMORY

George H. Wells, Santa Ana, and Perry B. Persons, Irvine, both of Calif., assignors to Technology Marketing Incorporated, Costa Mesa, Calif.

Continuation-in-part of Ser. No. 128,030, March 25, 1971, Pat. No. 3,697,966. This application July 13, 1972, Ser. No. 271,519
Int. Cl. G11c 5/02, 7/00, 11/06
U.S. Cl. 340—174 TB **15 Claims**



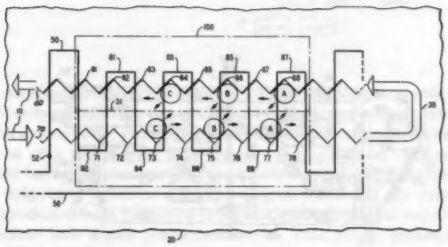
A system for supplying a current to a core memory stack having substantial inductance including a transformer having

a selectively variable primary/secondary turns ratio. The variable turns ratio permits the current buildup time interval in the core state to be minimized while reducing the power required to drive the stack.

3,774,182
CONDUCTOR-PATTERN APPARATUS FOR CONTROLLABLY INVERTING THE SEQUENCE OF A SERIAL PATTERN OF SINGLE-WALL MAGNETIC DOMAINS

John Alexander Copeland, III, Gillette, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Aug. 15, 1972, Ser. No. 280,785
Int. Cl. G11c *19/00, 11/14*
U.S. Cl. 340—174 VA **6 Claims**

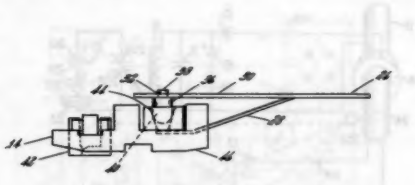


A circuit for controllably inverting the sequence of a serial pattern of single-wall magnetic domains is implemented by offsetting or "phasing" opposing serrations on the sides of a serrated groove which is superimposed by a serpentine conductor pattern that defines a serial string of enhanced propagation-pulse write circuits on both sides of the groove. A propagating pattern of domains on one side of the groove is displaced to the opposite side of the groove in response to an enhanced propagation pulse, thereby reversing the direction and inverting the sequence of domain propagation.

3,774,183
PIVOTAL SUPPORT ASSEMBLY FOR A MAGNETIC HEAD

Thomas A. Roscamp, Goleta, Calif., assignor to Applied Magnetics Corporation, Goleta, Calif.

Filed June 26, 1972, Ser. No. 266,407
Int. Cl. G11b *5/60*
U.S. Cl. 340—174.1 E **12 Claims**

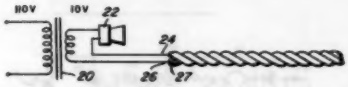


A Magnetic Head Pivotal Support for loading magnetic transducers onto the surface of a magnetic medium with a thin film of moving fluid there between wherein the support includes a bifurcated spring element, a pair of cylindrically shaped pivot elements connected to the ends of the bifurcated elements forming an alignment means and a rectangular shaped pivot bar having apertures therein which communicate with a spherical end of the cylindrical pins, which pivot bar is connected to the magnetic transducers and pivotally supported by the bifurcated spring element permitting movement of the magnetic medium and restricting yaw and movement in a tangential and radial direction is shown.

3,774,184
HEAT RESPONSIVE CABLE ASSEMBLY

David F. Scarelli, 214½ E. Spruce St., East Rochester, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,760
Int. Cl. G08b *17/00*
U.S. Cl. 340—227 C **5 Claims**

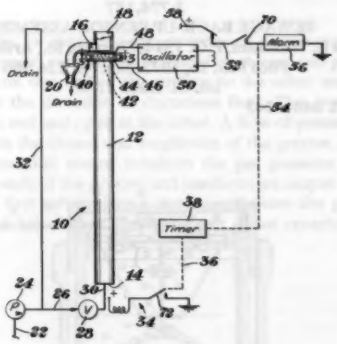


A heat responsive cable assembly for use with a fire alarm system, or the like, said assembly comprising a pair of helically twisted conductors of substantially the same thermal expansion rates, the wires being plastically deformed during twisting, with a medium of heat sensitive insulation therebetween which is removed in response to predetermined high temperature conditions to permit contact between the conductors due to random thermal expansions and changes in helix angles of adjacent sections of the conductors.

3,774,185
APPARATUS FOR DETECTING ORGANIC MATERIALS IN WATER

William H. Parth, Saginaw, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 4, 1972, Ser. No. 223,668
Int. Cl. G08b *21/00*
U.S. Cl. 340—236 **7 Claims**



A detector device for determining the presence of organic materials in water streams, such as chemical sewers, as a result of leakage or spillage. The device comprises an upright elongated electrically insulating tube through which material from the stream is pumped. At intervals flow through the tube stops, the lighter organic material rising to the top and displacing water downwardly. A pair of spaced apart metal rings near the top of the tube act as plates of an electrical capacitor. As the level of organic material in the tube reaches the location of the rings, the dielectric change changes the electrical value of the capacitor. This change in value is detected and utilized to trigger an alarm. The position of the rings along the tube is ad-

justable. Using the capacitor as part of the tuned circuit of an oscillator is one means to develop an alarm signal when the oscillator is detuned when the dielectric changes near the rings.

3,774,186

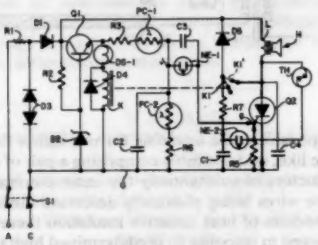
SMOKE DETECTOR FAILURE ALARM

Robert B. Enemark, Weymouth, Mass., assignor to Electro Signal Lab. Inc., Weymouth, Mass.

Filed Mar. 15, 1972, Ser. No. 234,775

Int. Cl. G08b *19/00*

U.S. Cl. 340—237 S **14 Claims**



In a smoke detector a regulated, half-wave rectifier supplies power for an exciter lamp, a photocell shielded from the lamp but viewing an area illuminated by the lamp, and a relay switching circuit triggered by the cell for applying the half-wave current to the winding of a horn so as to cause the horn to sound at the half-wave frequency when the cell senses smoke scattered from the illuminated area. The switching circuit for the horn can also be triggered by a thermostatic switch responsive to high ambient temperature. Failure of the exciter lamp or voltage regulator deenergizes the relay, switching in a pulsing circuit which sounds the horn at a distinctively different frequency than the smoke alarm.

3,774,187

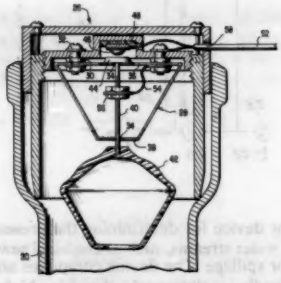
SEWAGE BACK-UP SENSOR ASSEMBLY

Robert L. Windham, P.O. 1514, Sherman St., Arlington, Tex.

Filed Feb. 16, 1972, Ser. No. 226,900

Int. Cl. G08b *21/00*

U.S. Cl. 340—243 **6 Claims**



A float operated, unit handled sensor assembly is mounted in the clean-out branch of a lateral sewage disposal line with the float element thereof positioned at a subterranean level intermediate the sewage disposal line and the lowest of the associateed plumbing fixtures located within the plumbing system served by the disposal line. Elevation of the float as a function of sewage blockage downstream of the conventional clean-out branch actuates an alarm at a point in time sufficiently early to permit clearing of the obstruction without back-up through the plumbing facilities while yet permitting limited or inadvertent use of the same.

3,774,188

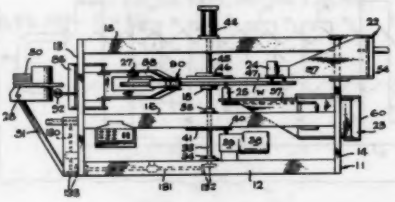
ELECTRICAL INDICATING CIRCUITS

Wolfgang Bial, 405 Shenley Rd., Borehamwood; Michael John McDonnell, 35 Pinner Park Gardens, North Harrow, and Gordon Alan King, 8 Wroxham Mansions, 36 Canfield Gardens, London, all of England

Filed Mar. 24, 1972, Ser. No. 237,810

Int. Cl. G08b *23/00*

U.S. Cl. 340—251 **10 Claims**



Lamp monitoring and failure indicating circuits are described which employ normally non-conducting semiconductor switches. The circuit potential sensed across a resistor connected to the monitored lamp biases a transistor OFF, holding a second transistor OFF. Thus in normal operation of the lamp the circuit draws no current. A fault turns both transistors ON.

3,774,189

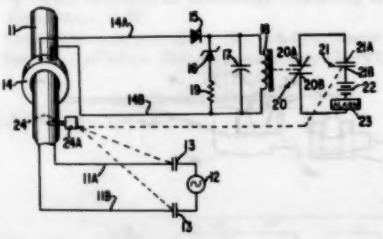
HEATER CABLE ALARM SYSTEM

David O. Brown, Tulsa, Okla., assignor to Sola Basic Industries, Inc., Milwaukee, Wis.

Filed Sept. 29, 1972, Ser. No. 293,346

Int. Cl. G08b *21/00*

U.S. Cl. 340—253 B **7 Claims**



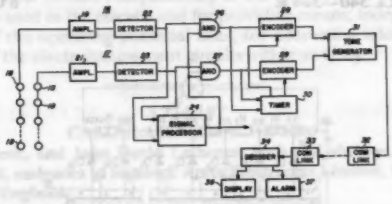
In a heater failure alarm system, a current sensor senses the current flow in the heater cable and generates a failure warning signal if there is not current flow when the heater cable is switched on. The current sensing transformer is adapted to be juxtaposed relative to the heater cable and is connected to a self-contained circuit module which closes relay contacts when current flow is not sensed. An alarm switch is mechanically connected to a main power switch for the heater cable and is in series with the relay contacts and an alarm means.

3,774,190

INTRUSION ALARM WITH SIGNAL PROCESSING AND CHANNEL IDENTIFICATION

William F. Kyle, Jr., Los Gatos, Calif., assignor to Scan Systems Incorporated, Campbell, Calif.

Filed Feb. 2, 1972, Ser. No. 222,745
Int. Cl. G08b 13/00
U.S. Cl. 340—258 R 11 Claims



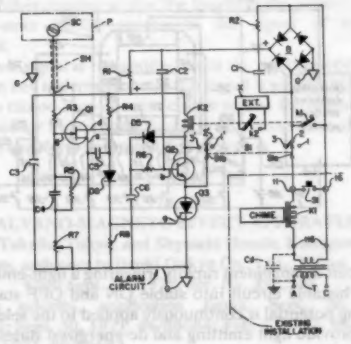
An intrusion detector employs a signal processor capable of not only recognizing the vibrational signature of a single intrusion event, but of recognizing a sequential pattern of the vibrations of a plurality of such events. A plurality of channels, each having sensor arrays at the inputs thereof, are connected to respective inputs of a common signal processor. An output is produced from the signal processor when the signal supplied thereto falls within prescribed limits. This output enables a respective channel to activate a tone code generator to produce an output having a group of frequencies corresponding to the particular channel. The modulated RF signal is then transmitted to a remote readout station. The signal processor recognizes the vibrations of each intrusion event and initiates a timer in response to the first of such events. Each subsequent event reinitiates the timing period of the timer until the full time period thereof has elapsed without the receipt of a subsequent pulse. A counter counts the number of such events, and if a predetermined count is achieved before an output is supplied by the timer, an alarm or similar indicator is actuated.

3,774,191

PROXIMITY ALARM CIRCUIT FOR ENTRANCE ANNUNCIATORS

Robert B. Enemark, Weymouth, Mass., assignor to Electro Signal Lab. Inc., Weymouth, Mass.

Filed Feb. 14, 1972, Ser. No. 225,795
Int. Cl. G08b 13/26
U.S. Cl. 340—258 C 20 Claims



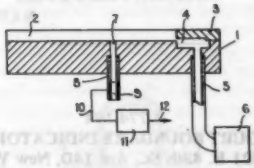
A household alarm circuit, when switched on during night hours, responds to the touch or proximity of a human body to the house door knob or lock by sounding the existing door bell or chime. The alarm circuit utilizes the low voltage supply for the door chime and has a proximity sensing lead for connection to the striker plate of the door latch. When the door knob or lock is approached or touched, the alarm circuit repeatedly sounds the door chime. The alarm circuit includes a rectifier for connection to the AC door chime supply, a transistor cut off by a potential change transmitted to its gate by the sensing lead, an SCR switch closed by the transistor, and a relay in series with the SCR switch with a contact for closing the door chime circuit.

3,774,192

DOCUMENT DETECTION DEVICE RESPONSIVE TO GAS STREAM PRESSURE CHANGES

David Gordon Boulter, Gamlingay, near Sandy, England, assignor to International Computers Limited, London, England

Filed Mar. 22, 1972, Ser. No. 236,902
Claims priority, application Great Britain, Apr. 28, 1971, 11,862/71
Int. Cl. G08b 21/00
U.S. Cl. 340—259 8 Claims



In apparatus for detecting the presence of documents on a document support surface, the surface has at least one groove extending from one end of the surface to the other end and aligning with the direction of document feed. The groove is closed at one end and open at the other. A flow of pressurized air is fed from the closed end lengthwise of the groove. A gas pressure dectection means monitors the gas pressure intermediate the ends of the groove and produces an output signal which has a first value when a document covers the groove and a second value when the document is not covering the groove.

3,774,193

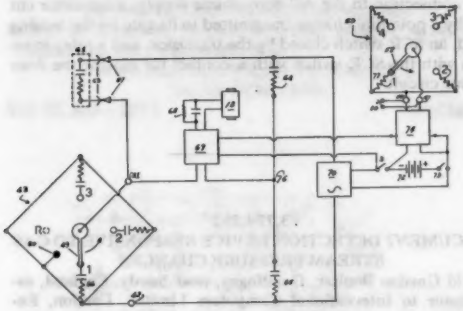
WATCHMAN'S TOUR ALARM SYSTEM

Tullo Vasquez Restrepo, Carrera 43A No. 30-91, Medellin, Colombia

Filed Aug. 24, 1972, Ser. No. 283,393
Int. Cl. G07c 1/20
U.S. Cl. 340—306 9 Claims

An alarm system establishes, according to a preset program, the order and the minimum time schedule to be followed by a watchman in checking control stations on his vigilance rounds. The watchman carries a portable control assembly which must be plugged into each fixed control station in the proper order and after the elapse of a minimum time before

the portable control assembly will shift to correspond to the next fixed control station. If the entire round is not completed



and the portable control assembly plugged into a main control station within a predetermined time, an alarm will be triggered.

3,774,194

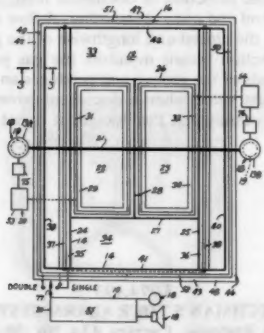
GAME COURT BOUNDARY INDICATOR SYSTEM

Peter Jokay, 321 E. 48th St., Apt 14D, New York, N.Y., and Stephen Grill, 425 E. 63rd St., Apt. E6K, New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,325

Int. Cl. A63b *71/06*

U.S. Cl. 340—323 **9 Claims**



A game court boundary indicator system in which critical zones adjoining the boundary lines have protected and/or concealed sensing means responsive to the proximity of a playing ball having triggering means, said sensing means being unaffected by the presence of the player's body or the tennis racket, and connected to circuit means actuating indicating means.

3,774,195

LIQUID CRYSTAL DISPLAY DEVICE

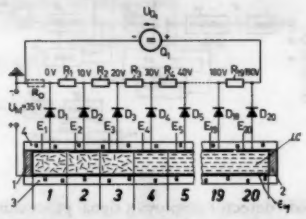
Peter U. Schulthess, Zurich, and Peter Wild, Wettingen, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Feb. 7, 1972, Ser. No. 224,039

Claims priority, application Switzerland, Feb. 15, 1971, 2230/71

Int. Cl. G02f *1/18*

U.S. Cl. 340—324 R **8 Claims**



An optical film, for example, of the so called nematic liquid crystal type is sandwiched between two electrodes forming a device of which at least one electrode is segmented. One electrode provides an equipotential plane while the other electrode has a surface resistance which provides a potential gradient therealong. The segmented electrodes are connected to a voltage supply by series or shunt rectifiers. The device may be used, for example, for indicating a measured value such as a voltage by a visible line or bar which represents an interface or a boundary between differing optical states and which bar or line travels through the device along a scale which thus represents direct readings of the measured value.

3,774,196

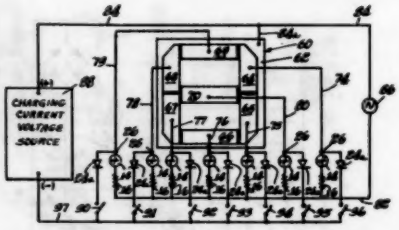
ELECTROLUMINESCENT CIRCUIT OR THE LIKE

Gordon R. Fleming, Pontiac, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 120,827, March 4, 1971, Pat. No. 3,715,607, which is a continuation-in-part of Ser. No. 825,153, May 16, 1969, Pat. No. 3,708,717. This application Jan. 22, 1973, Ser. No. 325,532

Int. Cl. G08b *5/36*

U.S. Cl. 340—336 **10 Claims**



A circuit arrangement rapidly triggering a light-emitting and control bistable circuit into stable ON and OFF states while operating potential is continuously applied to the selective circuit to provide light emitting and de-energized states. A light-emitting element or an element added in series therewith acts as a capacitor. The light-emitting and capacitive elements are connected in series with a threshold switching device having inherent time delay characteristics, and connected at the circuit juncture between the light-emitting and capacitive ele-

ments and the threshold switching device is a start and stop circuit preferably with isolation means for selectively applying start and stop pulses to charge the capacitor while bypassing the threshold switching device to initiate operation of the circuit during one instance, and to discharge the energy stored in the capacitive element to terminate operation of the circuit during another instance. A display array of rows and columns of such bistable circuits is formed with means for energizing selectively desired start and stop circuits associated with selective bistable circuits independently of the threshold switching devices used in the circuits and for providing means, independent of the operating potential lines, for addressing selected ones of the electroluminescent circuits within an array.

3,774,197

CALCULATING MACHINES

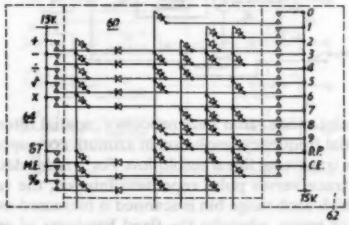
Neil Meek, and John David Letheren, both of Uxbridge, England, assignors to Sumlock Anita Electronics Limited, London, England

Filed July 9, 1971, Ser. No. 161,181

Claims priority, application Great Britain, July 15, 1970, 34,240/70

Int. Cl. H04l *3/00*

U.S. Cl. 340—347 DD **10 Claims**



A calculating machine is disclosed employing a circuit for repetitively generating a pulse train representing a depressed function or digit key. The generating circuit has a continuously driven closed-loop counter circuit, which has an output driving another closed-loop counter circuit to cyclically generate a 'reset' signal and a sequence of key code signals in which each code signal corresponds to code signal signalled from a matrix when a digit or function key is depressed. The code signals from the other counter circuit and the matrix are inputs to a group of coincidence circuits the outputs of which form a 'set' input to a two-state circuit which is set when two code signals coincide and which is reset by the reset signal from the other counter so that the length of the pulse output of the two-state circuit represents the signal of the key depressed.

A further signal is transmitted from the matrix circuit when a function key is depressed and this signal is gated with an output of the closed-loop counter circuit so that the two-state circuit output for a depressed function key occurs at a different time from that for a depressed digit key.

3,774,198

GALVANO-MAGNETO EFFECT APPARATUS

Masaaki Takeda, Tokyo, and Shyuichi Honda, Kanagawa, both of Japan, assignors to Denki Onkyo Co., Ltd., Tokyo, Japan

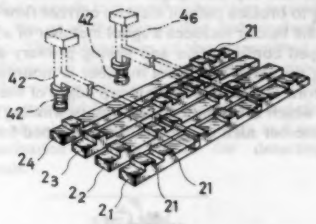
Filed Sept. 29, 1972, Ser. No. 293,548

Claims priority, application Japan, Sept. 30, 1971, 46/88682; Sept. 30, 1971, 46/88684; Feb. 3, 1972, 46/14550; Sept. 30, 1971, 46/88683

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 L **25 Claims**

A galvano-magneto effect apparatus in which a plurality of moving yokes being combined with a fixed yoke to form a magnetic path are arranged in parallel between different magnetic pole surfaces of said fixed yoke containing magnets respectively, a plurality of galvano-magneto effect devices to which a magnetic flux is applied are provided between the moving yokes and fixed yoke and said moving yokes are adapted to independently move in parallel, whereby said devices are respectively operated by actuating said moving yokes selectively with selecting means.



3,774,199

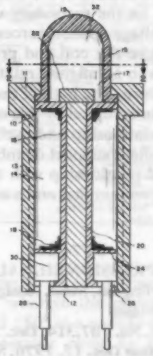
BINARY ELECTROMAGNETIC EVENT INDICATOR

Willard I. Patterson, Wolcott, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Apr. 5, 1972, Ser. No. 241,232

Int. Cl. G08b *15/00*, *23/00*

U.S. Cl. 340—373 R **7 Claims**



A two-state electromagnetic indicator utilizes a thin disc having discrete permanent magnetic poles. The disc, which has opposite sides of differing color, is latched to the outermost portion of the magnetic core of an electromagnet. DC current supplied to the electromagnet will cause a polarity opposite to the disc polarity, thereby causing the disc to be repelled and consequently to flip and change the indication. Means for restoring the disc to its original position are described.

3,774,200

BUZZER INCLUDING COIL WITH WOUND CONNECTIONS

Thomas C. Heath, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

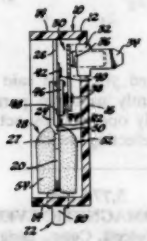
Filed Nov. 10, 1972, Ser. No. 305,305

Int. Cl. G08b *3/00*

U.S. Cl. 340—384 R **5 Claims**

A buzzer includes a plastic housing which has a box-like configuration and supports a generally U-shaped ferrous core

whose base has a number of relatively sharp edges. An electrically conductive resilient support member is mounted on one of the legs of the core and supports a ferrous armature adjacent the other leg of the core in laterally spaced relationship relative thereto. The support member is deflected when the armature moves into alignment with the adjacent leg of the core and thereby disengages a first contact mounted on the housing to break a path of electric current flow to the core. A coil of the buzzer includes a spool member of a generally saddle-shaped configuration and having primary and secondary winding portions. The spool member is mounted on the base of the core so as to leave the sharp edges of the base exposed to wire which is wound on the primary winding portion of the spool member such that insulation is scraped from the wire to



provide an electrical connection between the core and the inner end of the coil wire. A second contact is mounted on the spool member and includes a flange with relatively sharp edges that scrape the insulation from the other end of the coil wire as it is wound on the secondary winding portion of the spool member. A voltage applied across the contacts activates the buzzer to energize the coil and provide a flux field that moves the armature to an aligned relationship relative to the adjacent leg of the core. The path of current flow through the buzzer is cyclically interrupted by this movement of the armature to its aligned relationship and cyclically de-energizes the coil to allow the resilient support member to return the armature to its unaligned relationship with the core and thus provide rapid cyclic movement that emits an audio signal.

3,774,201

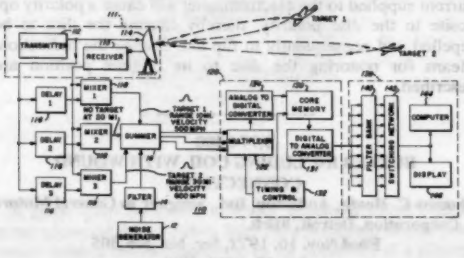
TIME COMPRESSION SIGNAL PROCESSOR

John D. Collins, Burlington, Mass., assignor to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 787,314, Dec. 27, 1968, abandoned. This application Dec. 17, 1970, Ser. No. 99,294

Int. Cl. G01s *7/30, 9/02*

U.S. Cl. 343—5 DP **9 Claims**



A time compression system used for spectrum analysis of multi-channel digital systems in which there are X identical input channels and Y identical filters. Each input is sampled in parallel and then quantized with an analog-to-digital converter. The inputs are then stored channel by channel in a random access memory. Readout is interleaved simultaneously with the writing and each channel is readout serially. The stored digital signals are converted back to serial analog signals and fed to a single bank of filters for spectrum analysis.

3,774,202

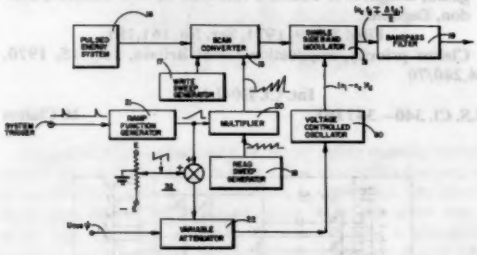
SQUINT-MODE SPATIAL FILTER

Jerry E. Nolette, Orange, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Feb. 10, 1967, Ser. No. 615,248

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 CM **11 Claims**



In a squint-mode radar data processor, spatial filtering provides spatial frequency resolution in azimuth corresponding to a uniform transverse lineal resolution. For a radar data matrix of range trace versus pulse repetition interval, the read-scan rate at which each range bin is scanned is increased as a direct function of range, whereby the fixed bandpass of an output filter represents a spatial frequency resolution which varies with range and corresponds to a fixed lineal resolution at all ranges.

3,774,203

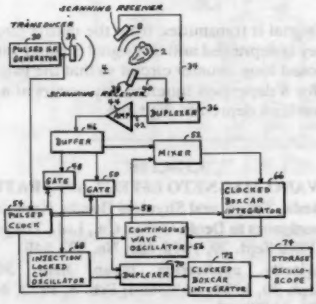
HOLOGRAPHIC DEPTH CORRECTION

John W. Dooley, Brooklyn, N.Y., assignor to Kuhlenschmidt-Dooley Corporation, Brooklyn, N.Y.

Filed Nov. 24, 1971, Ser. No. 201,657

Int. Cl. G01s *9/02*; **G02b** *27/22*

U.S. Cl. 343—5 R **8 Claims**



Apparatus and method for correcting information used in construction of phase-only holograms to reduce or eliminate

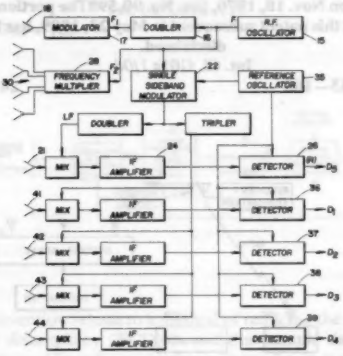
depth distortion. Reference signals are constructed from received longer wavelength signals for use in converting the phase differences as received into greater phase differences corresponding to the use of shorter wavelength signals. The greater phase difference signals allow construction of a hologram which can be read out with waves of the shorter wavelength.

3,774,204

SELF COHERENT ADAPTIVE LANDING SYSTEM

Billie W. Preston, Littleton, Colo., assignor to Martin Marietta Corporation, New York, N.Y.

Filed Mar. 23, 1971, Ser. No. 127,128
Int. Cl. G01s 9/44
U.S. Cl. 343—7 ED **6 Claims**



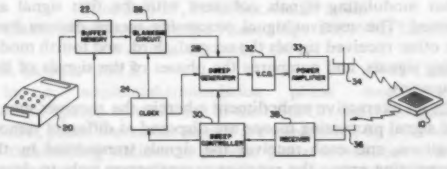
The present invention relates to a radar method and radar apparatus for controlling the attitude and terminal descent of an interplanetary vehicle and, more particularly, to improvements in such a system which comprise the use of one central radar beam of frequency *F*1 which is directed parallel to the roll axis of the vehicle and at least two other radar beams of frequency *F*2 which are directed downwardly from the vehicle together with associated basic radar R.F. means to provide all conversion computations and adaptations required without the use of scale factors and coordinate conversions and where the radar outputs connect directly to the attitude control system through simple logic elements.

3,774,205

MERCHANDISE MARK SENSING SYSTEM

Richard C. Smith, and William M. Bechtold, both of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Aug. 2, 1971, Ser. No. 167,958
Int. Cl. G01s 9/56
U.S. Cl. 343—6.5 SS **7 Claims**



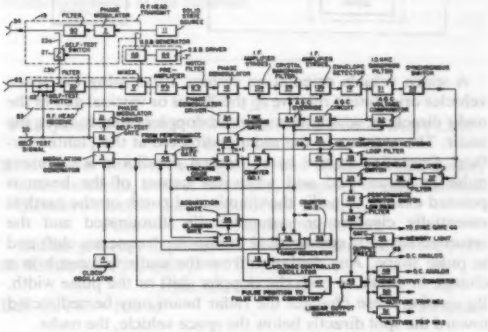
A system for the automatic reading of prices, stock keeping units and and other like information, attached or affixed to packages and the like, and also providing pilferage control means. Responders, i.e, an array of microminiature resonant devices capable of storing and imparting information, are utilized in association with packages and the like for the storage of encoded information because of their ability to respond to certain microwave signals having a particular resonant frequency at a first plane of polarization and the further ability to reradiate signals to a receiver having a second plane of polarization, the or of the transmitted and received signal being the same. The polarization of the transmitted signals covering the frequency range of the responders provides a system in which a continuously transmitted signal may be utilized. Means are provided for initially polarizing and directing the microwave signals towards the responders and means of different polarization are provided for detecting the reradiated signals.

3,774,206

PSEUDO-RANDOMLY PHASE MODULATED RADAR ALTIMETER

Sol Rauch, Montreal, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada

Filed Aug. 16, 1971, Ser. No. 172,071
Claims priority, application Canada, Sept. 8, 1970, 092577
Int. Cl. G01s 9/23
U.S. Cl. 343—7 A **13 Claims**



This invention relates to a pseudo-randomly phase modulated radar altimeter wherein the phase of a CW wave is shifted between 0° and 180° in a pseudo-random fashion by a modulation code generator prior to transmission, and a reflected wave is demodulated in the same way by a tracking code generator which provides a code identical to the modulation code generator code. A feature of the invention is that, in order to provide a self-test facility a digitally simulated delay is provided. The performance monitoring facility takes cognizance of the fact that, when the receiver is tracking, a closed loop is formed and that, in a closed loop, a perturbation introduced at one point will travel all around the loop. In the system, a perturbation is introduced at one point in the loop and a second point in the loop is examined for the presence or absence of the perturbation. The relative delay between the modulation code generator and the tracking code generator is indicative of the travel time of a reflected wave. In order to translate this data to useful information, a pulse is provided from the generators to different inputs of a flip-flop when the generators pass all ones state (or any other preselected state). The output of the flip-flop is then a train of pulses whose duty cycle is proportional to the relative delay between generators. Acquisition is effected by providing zero relative delay between the generators at the start. The tracking code generator is then automatically delayed by one clock pulse periodically. The automatic delay is terminated when the relative

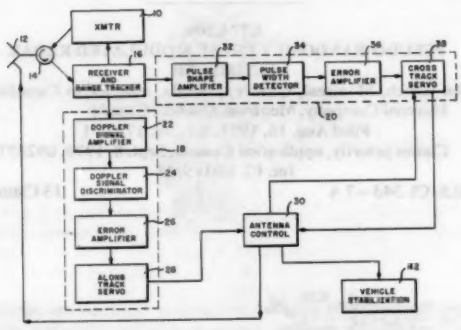
delay between the generators is equal to the two-way travelling time of a reflected signal, i.e. the system begins to track.

3,774,207

NADIR SEEKER ORIENTATION OF A SPACE VEHICLE IN RELATION TO THE PLANET BEING ORBITED

Benjamin S. Yaplee, Hyattsville, Md., and Allan Shapiro, Alexandria, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 25, 1972, Ser. No. 247,306
Int. Cl. G01s 9/06
U.S. Cl. 343—7.4 **3 Claims**



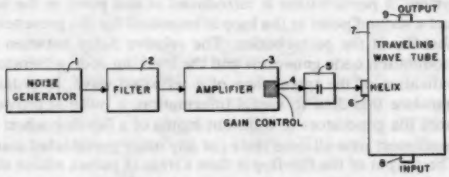
A space vehicle orientation system, for sensing the space vehicles orientation relative to the Z axis or vertical axis in the nadir direction, which uses a pulsed doppler radar to trace the nadir. The antenna of the radar is directed at the plantes surface. Operating in the beam limited condition, a coherent pulse is transmitted and when the center of the beam is pointed exactly at nadir the illuminated patch on the earth is essentially circular or symmetrically illuminated and the returned signal is symmetrical in doppler frequency shift and in pulse shape. Any deviation from the nadir will result in a change in either or both the doppler shift or the pulse width. By sensing these changes the radar beam may be redirected toward the spot directly below the space vehicle, the nadir.

3,774,208

NARROW BAND FREQUENCY MODULATED JAMMER

Clifford G. Dorn, and John R. Padilla, both of Riverside, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 24, 1968, Ser. No. 770,454
Int. Cl. H04k 3/00
U.S. Cl. 343—18 E **4 Claims**



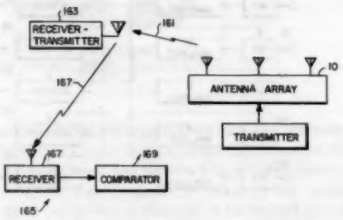
A narrow band frequency modulated jamming device comprising a noise source, a low-pass filter, an amplifier and a traveling-wave tube capable of being modulated by the application of a signal to the helix thereof. Said low-pass filter is coupled to the noise source and removes or suppresses all generated frequencies above 500 Hz. The output terminal of said filter is connected to the amplifer which in turn is coupled to the helix of the traveling-wave tube. The gain control of the amplifier is adjusted so that a predetermined level of noise voltage is applied to the helix of the traveling-wave tube. This narrow bandwidth of noise serves to modulate the input signal to the traveling-wave tube. Said modulated input signal is then retransmitted as a jamming signal having a very narrow RF bandwidth and good carrier suppression.

3,774,209

RADIO COMMUNICATION SYSTEM

James Evans Fleming, Fairfax; Clarence A. Lovell, McLean, and James M. Bandle, Alexandria, all of Va., assignors to Air Land Systems Co., Fairfax, Va.

Continuation-in-part of Ser. No. 14,031, Feb. 25, 1970. This application Nov. 18, 1970, Ser. No. 90,598The portion of the term of this patent subsequent to May 23, 1989, has been disclaimed.
Int. Cl. G01s 1/08
U.S. Cl. 343—102 **24 Claims**



A novel radio communication system is disclosed, the system having particular applicability and utility as a radio navigation aid. A transmitting means is utilized which, in the preferred inventive embodiment, comprises a plurality or array of antennas disposed in fixed spaced-apart relationship with one another at a known location. One of the transmitting antennas transmits a reference signal, preferably a carrier wave, modulated by a first frequency or frequencies. The remaining transmitting antennas each transmits a single or double sideband suppressed carrier signal produced by respectively different modulating frequencies for each signal. These different modulating frequencies bear a harmonic or multiple relationship with the first modulating frequency or frequencies. In the preferred inventive embodiment, each of the remaining transmitting antennas are disposed at different distances from the first or reference transmitting antenna.

The novel system further includes receiver and signal processing means disposed either at the same or different locations remote from the location of the transmitting means. The receiver means generates from the received reference signal a signal having the frequency and phase of the first modulating signal at the transmitter. From this signal, the other modulating signals coherent with the first signal are derived. The receiver/signal processing means derives from the other received signals the second, third, and fourth modulating signals, and compares the phases of the signals of like frequency.

In an alternative embodiment wherein the receiver means and signal processing means are disposed at different remote locations, and each receives the signals transmitted by the transmitting array, the receiver means serves only to detect the various modulating frequencies, and then retransmits the detected frequencies to the signal processing means for phase comparison.

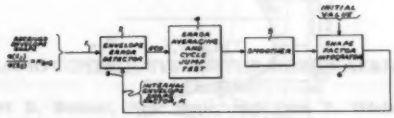
In each instance, the detected phase differences are indicative of the relative angular direction of the receiver means from the transmitting array. In the preferred embodiment, the antennas of the transmitting array are disposed on a line and the phase difference detected represents the angular deviation of the receiver from a plane bisecting and perpendicular to the line of transmitting antennas. The accuracy of the system is determined by the maximum spacing between a pair of antennas in the array. The other antennas are used only for resolving ambiguities.

3,774,210

AUTOMATIC CALIBRATION OF LORAN ENVELOPE TO CYCLE DISCREPANCY

Leonard D. Mollod, New York, N.Y., and LeRoy D. Steele, Paterson, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed June 21, 1972, Ser. No. 265,063
Int. Cl. G01s 1/24
U.S. Cl. 343—103 **2 Claims**



This invention relates to a method of reducing the envelope-to-cycle discrepancy (ECD) in a digital sample data system such as is used in radio navigation systems; i.e., Loran. Incoming pulsed carrier signals are amplitude sampled to determine the time position on the rising edge of the pulse envelope. In this way, the correct carrier phase is selected to eliminate ambiguities between lanes that occur every carrier cycle. The instantaneous envelope-to-cycle discrepancy of the received signal is measured with respect to an internally stored shape factor K, and averaged to reduce noise for a length of time determined by the signal-to-noise ratio or for a fixed length of time determined by worst case conditions. A cycle jump test is performed to determine whether the average error is due to a timing error or is truly an envelope-to-cycle discrepancy bias error, the threshold being ±5 microseconds which is one-half of a carrier cycle. The ECD is then driven to a null by updating an integrator which holds the accumulated ECD and which is fed back and subtracted from the envelope-to-cycle discrepancy measured on the incoming signal.

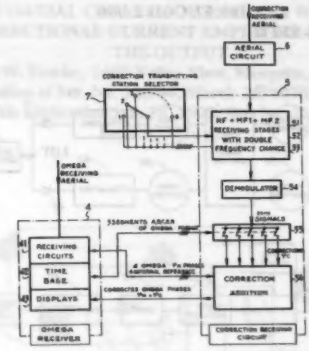
3,774,211

METHOD OF AND APPARATUS FOR TRANSMITTING PHASE CONNECTIONS, IN PARTICULAR FOR THE OMEGA RADIO NAVIGATION-SYSTEM

Georges Nard; Gerard Millot, both of Nantes, and Christian Lamiraux, St. Sebastian, Loire, all of France, assignors to Societe D'Etudes, Recherches Et Constructions Electronique Sercel, Carquefou, France

Filed July 27, 1972, Ser. No. 275,586
Claims priority, application France, Apr. 20, 1972, 7214056
Int. Cl. G01s 1/30
U.S. Cl. 343—105 R **17 Claims**

In a sequential-transmission phase measurement radionavigation system, such as the OMEGA radio-navigation system, phase correction signals are transmitted by a network of transmitting stations to provide phase corrections over a predetermined area. Each phase correction transmitting station compares the measured phases with preset theoretical phases and provides a phase correction signal for each measured phase. The phase correction signals are time multiplexed with a multiplex frequency between 10 and 30 times the repetition rate of each of the sequential transmissions of the radio-navigation system, the multiplexing being synchronous with the sequential transmissions. The multiplexed signal is phase modulated on a carrier with a low modulation index. At a receiver the multiplexed phase correction signal is demodulated and demultiplexed to provide the phase correction signals which are used to modify the measured phases at the receiver.

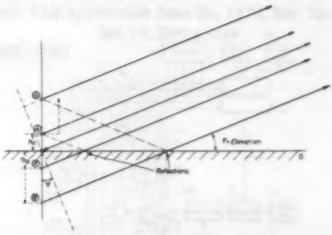


3,774,212

FREQUENCY MEASURING METHOD FOR A DOPPLER BEACON

Klaus-Dieter Eckert, Ludwigsburg, and Hans-Joachim Roper, Kornwestheim, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,649
Claims priority, application Germany, Nov. 24, 1969, P 19 58 931.2; Nov. 24, 1969, P 19 58 932.3
Int. Cl. G01s 1/40
U.S. Cl. 343—108 M **2 Claims**

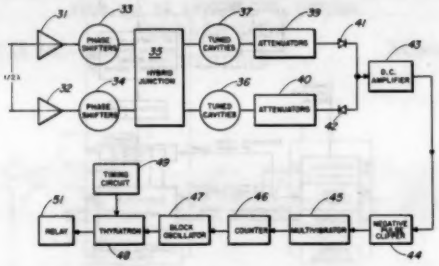


This invention relates to a method of measuring the elevation angle in cooperation with a Doppler radio beacon. The beacon includes a vertical linear antenna array in which the movement of an individual radiator is simulated with a sawtooth-shaped time function. To determine the Doppler shift of the signals reaching the receiver, the zero crossovers of the sum signal are counted over a beat cycle of the Doppler components. The frequency of the Doppler shift, which is proportional to the sine of the elevation angle, is computed by quotient formation with the respective measuring time.

3,774,213
METHOD FOR DETERMINING THE CLOSEST POINT OF APPROACH

Robert F. Riggs, Charlottesville, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 8, 1959, Ser. No. 818,978
Int. Cl. G01s 11/00
U.S. Cl. 343—112 D **4 Claims**

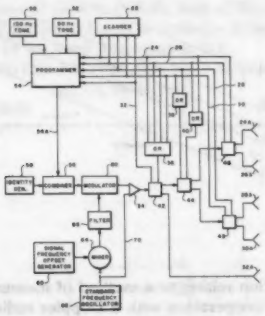


1. A radio fuze system for determining the closest point of approach of a missile to a target comprising a pair of stations for receiving radio signals from said target, means for comparing the phase relationship between said signals including means for algebraically adding said signals to produce an output, means for amplifying said output and means for deriving a firing signal for said fuze when said missile attains said closest point of approach; said amplifying means including means for amplifying the DC component of said output and said means for deriving a firing signal including means for deriving a first pulsed signal from said DC amplifying means output and means for deriving a second pulsed signal whereby said firing signal occurs only when said pulsed signals are derived simultaneously.

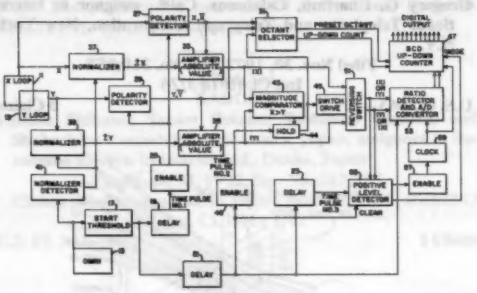
3,774,214
SCANNING BEAM GUIDANCE METHOD AND SYSTEM

Donald J. Toman, Pleasantville, N.Y., and Lloyd J. Perper, Tucson, Ariz., assignors to Tull Aviation Corporation, Armonk, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,668
Int. Cl. G01s 1/14
U.S. Cl. 343—108 M **15 Claims**



digitally implemented signal processing means which derive from the received signals measures of their relative phases

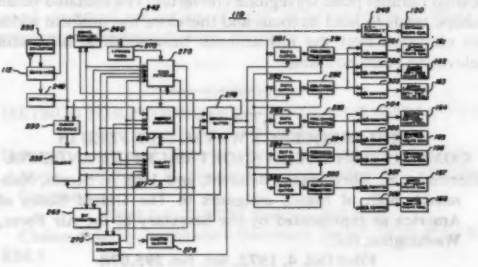


and amplitudes and generate therefrom an ambiguity-free measure of the azimuthal angle of the electromagnetic pulse source.

3,774,217
RADIO CONTROL SYSTEM FOR MOBILE AERIAL PLATFORMS

Robert B. Bonner, New Hope, and John F. Wiehe, Jr., Roseville, both of Minn., assignors to Tele-E-Lect, Inc., South Minneapolis, Minn.

Continuation of Ser. No. 249,382, May 1, 1972, abandoned. This application Feb. 21, 1973, Ser. No. 334,284
Int. Cl. B66c *23/62*
U.S. Cl. 343—225 **20 Claims**

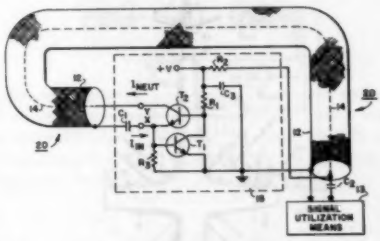


This invention is directed to an improved control system for articulated scaffoldings or mobile aerial towers employing a plurality of hydraulic actuators and an improved electric hydraulic control for operation of the same from a remote source through a portable transmitter and receiver combination. The transmitter includes a plurality of control handles and associated logic equipment to convert analogue directional and speed control signals into binary digital form for transmission by the transmitter on a modulated carrier frequency. The receiver which is mounted at the base of the tower receives the transmission and demodulates the signals converting them from binary digital form to analogue form for the purpose of proportionately energizing control valves operating the hydraulic motor for directional and speed controls of the motor. Included in this system is a bypass control for isolating the hydraulic system whenever the transmitter or receiver is inoperative or any type power failure may be experienced to insure against accidental or undesired movement of the hydraulic actuators thereof. Power is applied to the transmitter with operation of any of the manual controls and with reception of the signal at the receiver, the bypass control is opened allowing hydraulic fluid to flow to the motors for control purposes. The improved control system includes provision for manual override control on the control valves from the receiver site.

3,774,218
COAXIAL CABLE LOOP ANTENNA WITH UNIDIRECTIONAL CURRENT AMPLIFIER OPPOSITE THE OUTPUT

Clarence W. Fowler, 1400 Valley View, Mesquite, Tex.

Continuation of Ser. No. 22,594, March 25, 1970, abandoned. This application Jan. 18, 1972, Ser. No. 218,723
Int. Cl. H01q *1/26*
U.S. Cl. 343—701 **2 Claims**

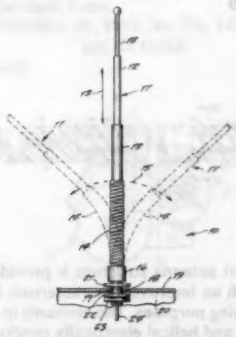


Disclosed is an antenna system having a second loop disposed immediately adjacent and coupled to the primary field detecting or transmitting loop for neutralizing inductive reactance through the primary loop. Unidirectional current means which is disclosed as a low input impedance, high output impedance, unity gain current amplifier couples the primary and secondary loop for preventing significant current flow through the secondary loop except ina direction opposite that of the current flow through the primary loop, the primary and secondary loop, respectively, being the shield and center conductor of a coaxial cable, the center conductor coupled to signal utilizaton or transmitting means for processing or generating electromagnetic signal waves.

3,774,219
TWIST AROUND ANTENNA

Robert J. Cella, Charlestown, Mass.

Continuation-in-part of Ser. No. 85,919, Nov. 3, 1970, abandoned. This application June 26, 1972, Ser. No. 266,440
Int. Cl. H01q *1/24*
U.S. Cl. 343—702 **3 Claims**



An antenna for use in television or radio receivers which is affixed to the receiver in such a manner that the antenna inter-

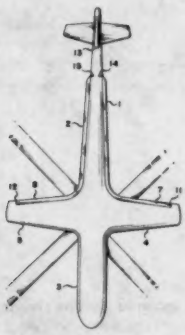
cepts radio waves and directs them into the receiver, this antenna is characterized by its ability to be positioned in an optimum manner for reception without having to move the set or receiver, a flexible segment, and telescopic end which permits the antenna to be extended and moved about freely.

3,774,220

AIRBORNE VEHICLE HIGH FREQUENCY ANTENNA

William R. Martin, and Charles D. Widell, both of Northridge, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 30, 1972, Ser. No. 267,987
Int. Cl. H01q *1/28*
U.S. Cl. 343—708 **10 Claims**



An aircraft antenna comprising an essentially balanced, folded dipole utilizing portions of the vehicle structure as the radiating elements. Conductors are spaced apart from, and faired into, the trailing edge of the main wings. High-frequency currents are distributed on the conductors and, via connections to the wing tips, the vehicle structure in a manner to provide essentially an omnidirectional radiation pattern in a predominantly horizontal polarization.

3,774,221

MULTIELEMENT RADIO-FREQUENCY ANTENNA STRUCTURE HAVING LINEAR AND HELICAL CONDUCTIVE ELEMENTS

Richard J. Francis, deceased, late of Pataskala, Ohio (by Clara A. Francis, executrix)

Continuation of Ser. No. 53,062, July 8, 1970, abandoned. This application June 20, 1972, Ser. No. 264,624
Int. Cl. H01g *1/40, 1/36, 9/30*
U.S. Cl. 343—749 **14 Claims**

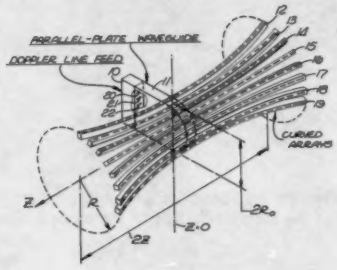
A multi-element antenna structure is provided which may be fabricated with an improved characteristic impedance for impedance matching purposes. The elements in an antenna include both linear and helical electrically conductive elements that are structurally supported and protectively encased in a dielectric material comprising a fiber-glass-reinforced synthetic resin matrix.

3,774,222

WIDE-ANGLE PLANAR-BEAM, ANTENNA ADAPTED FOR CONVENTIONAL OR DOPPLER SCAN USING CURVED ARRAYS

Gregory G. Charlton, Calabasas, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 30, 1972, Ser. No. 310,957
Int. Cl. H01q *3/26*
U.S. Cl. 343—771 **5 Claims**



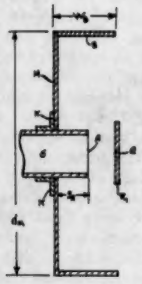
An antenna involving a plurality of linear arrays disposed about a surface of revolution formed about a horizontal axis by rotation of a double-ended hyperbolic curve. Each of the arrays follows a line conforming to that surface of revolution but lying entirely in a plane also containing the horizontal axis of the surface of revolution. The antenna elements of each array are excited from a transmission line such as a waveguide which is, in turn, fed from a centrally located parallel-plate waveguide planar beam generating arrangement. A conventional or Doppler-scan array provides the excitation for the so-called parallel-plate waveguide converter. The radiated beam shape tends to hold its focus and therefore has uniform width in elevation over the full azimuth beamwidth at all useful elevation beam positions.

3,774,223

HIGH-FREQUENCY WAVEGUIDE FEED IN COMBINATION WITH A SHORT-BACKFIRE ANTENNA

Hermann W. Ehrenspeck, Belmont, and John A. Strom, Nabnasett, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 4, 1972, Ser. No. 295,078
Int. Cl. H01q *19/14*
U.S. Cl. 343—779 **17 Claims**



A high-frequency waveguide feed in combination with a short-backfire antenna having a cavity and multiple reflectors

to permit high power handling capabilities and high frequency applications. An open end of a waveguide is used as the primary radiator in the antenna cavity. The waveguide intrudes into the cavity from behind the larger reflector plate. The polarization response of the antenna is determined by the type of waveguide chosen.

3,774,224
RADOME

Yoshizo Shibano; Tetsuo Hatano; Toshihiko Ohkura, and Shohachiro Yamashita, all of Osaka, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed June 30, 1972, Ser. No. 267,755
Claims priority, application Japan, June 30, 1941, 46/47843
Int. Cl. H01q 1/42
U.S. Cl. 343—872 **1 Claim**

A one-half-wavelength radome is made of a corrugated plate of ordinary dielectric material. The corrugated plate is made such that the pitch of corrugation is smaller than the wavelength at the operating frequency and the height of corrugation is effectively equal to one-half the wavelength at the operating frequency. A radome of this construction exhibits good electrical properties of small reflection and low dielectric loss and high mechanical strength.

3,774,225
METHOD FOR PRODUCING A VISIBLE RECORD OF GAS FLOW PATTERNS

Heinz Kimmel, and Heinrich Opitz, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

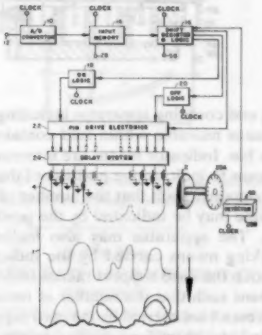
Filed July 7, 1972, Ser. No. 269,821
Claims priority, application Germany, July 7, 1971, P 21 33 834.1
Int. Cl. G01d
U.S. Cl. 346—1 **9 Claims**

A method of producing a visible record of the flow patterns of a gas about a surface. The method includes an initial step of applying a layer of photographic material to the surface, the layer having an initially uniform moisture level throughout. The gas, at a different moisture level relative to the layer, is caused to flow past the surface for a sufficient period to create differential moisture levels over the layer dependent on the flow pattern of the gas across the surface. The next step is to create a latent photographic image within the layer corresponding to the differential moisture levels over the layer. Finally the latent photographic image is developed into a visible image.

3,774,226
TRANSVERSE RECORDER

Dale O. Ballinger, Denver, and Norman L. Stauffer, Englewood, both of Colo., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 9, 1971, Ser. No. 206,293
Int. Cl. G01d 9/02
U.S. Cl. 346—35 **10 Claims**

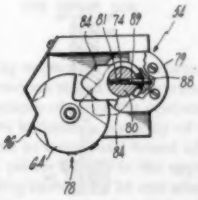


A recorder using an analog-to-digital converter for converting an input signal into a succession of digital words. The digital words are stored in groups with each group having a number of words corresponding to the number of recording elements arranged along a recording line. Each digital word in a group is compared with a digital signal representative of the position of a recording medium. Upon the detection of an equality between the compared signals, an energizing signal is applied to a corresponding one of the recording elements which energized state is maintained until the loss of an equality between the compared signals corresponding to a previously energized recording element. The recording lines are located transverse to the motion of the recording medium with a plurality of recording lines forming a recording frame for recording a predetermined portion of a time axis of the input signal.

3,774,227
MULTIPLE-KEY LOCK MECHANISM

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

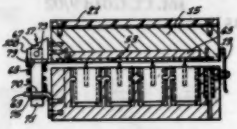
Filed May 20, 1971, Ser. No. 145,193
Int. Cl. G01d
U.S. Cl. 346—54 **4 Claims**



A fuel delivery pump with an accounting system having a multiple-key lock usable by each of a plurality of keys assigna-

ble to authorized operators for unlocking the pump for delivering fuel and a printer for printing the amount of each fuel delivery along with the identification of the key employed for unlocking the pump.

3,774,228
INVENTORY RECORDING APPARATUS
Lonnie Ray Nielson, 132 N. Granados, Solana Beach, Calif.
Filed Apr. 5, 1972, Ser. No. 241,126
Int. Cl. G01d
U.S. Cl. 346—104 **8 Claims**



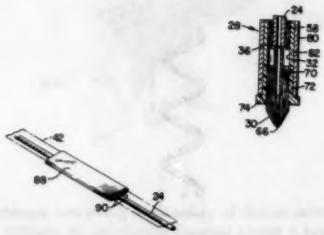
A storing and counting apparatus including a container and partition means movable within said container to define the volume of a bin. Indicator means are interconnected with the partition means to indicate the position of the partition means within the container such that the number of items in the bin at a given time may be indicated by the position of the partition means. The apparatus may also include card support means, marking means carried by the indicator means, and means to move the card support means into contact with the marking means such that the number of items in the bin may be indicated on a card carried by the card support means.

An ordering apparatus for ordering articles of commerce to maintain preselected levels of the articles in an inventory. Indicator means having marking means associated therewith are moved in slideways in a top member to indicia indicating the number of articles then in stock. The top member is then positioned on a base member including a card supporting surface having an order card supported thereon in a predetermined manner with the marking means contacting the card and forming a permanent record thereon. The record card has coded information thereon pertaining to the desired quantity of each article to be maintained in the inventory. The spatial arrangement of the coded information with respect to the indicia on the top member is such that the permanent record on the card directly indicates the number of articles which must be ordered to maintain the preselected inventory level of that article.

3,774,229
RECORDER STYLUS ASSEMBLY
William R. Blackwood, Topsfield; Kenneth J. Germeshausen, Weston, and Edward L. Worth, Lexington, all of Mass., assignors to EG & G, Inc., Bedford, Conn.
Filed Oct. 19, 1972, Ser. No. 298,905
Int. Cl. G01d *15/06*
U.S. Cl. 346—139 C **2 Claims**

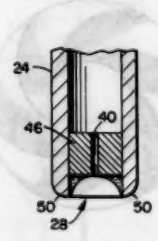
A recorder stylus assembly having a metallic rod, the recording end of which has reduced dimensions, a tip made of a plastic material fixed upon said end of the rod, the tip and rod having planar end faces that are co-planar when first assembled and perpendicular to their respective axes. The tip and rod are made of materials such that during break-in use the tip wears slightly leaving the end face of the rod protruding about one mil beyond the end face of the tip. During subsequent operation wearing at the end faces of the tip and rod is such that the one mil protrusion is maintained.

3,774,230
INKING PEN CONSTRUCTIONS
Aubrey R. Tullos, 1510 Haywood St., Odessa, Tex.
Filed Jan. 31, 1972, Ser. No. 222,047
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **17 Claims**



The disclosure has several embodiments of pen tip mounting constructions for use in recording pen systems and connecting assemblies for attaching an inking pen to the recorder arm of a recording pen system. A fiber pen tip has a tubular steel insert or an outer annular bushing or both assuring an open ink passageway through the tip and avoiding clogging which can occur because of the inherent capillary passageways in the tip becoming closed during insertion of the tip into a mounting chamber. One embodiment shows the bushing with an enlarged, knurled or serrated lower end to facilitate replacement of the pen tip in its mounting chamber. The inking pen includes a capillary pen tube having an attachment device thereon for easy, detachable mounting of the inking pen on the recorder arm of a recording apparatus.

3,774,231
JEWEL TIP CAPILLARY PEN
Aubrey R. Tullos, 1510 Haywood St., Odessa, Tex.
Filed May 15, 1972, Ser. No. 253,008
Int. Cl. G01d *15/16*
U.S. Cl. 346—140 **5 Claims**



The disclosure includes several embodiments of a jewel tip for use in pen assemblies mounted on recorder arms of recorder apparatuses. The jewel tip is inserted into the writing end of a capillary pen tip, and, in one embodiment, may have

its end protruding to act as the writing tip, or, in another embodiment, may be inset into the capillary pen tip.

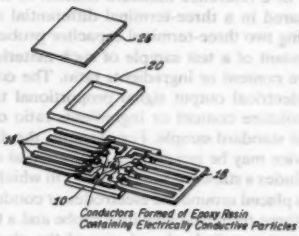
In either case, the jewel tip serves two purposes, one being to act as a plug to prevent drying of ink in the capillary pen tube and the other being to feed ink to a writing surface at a constant steady rate to assure an uninterrupted line on the writing surface.

3,774,232

PACKAGE FOR INTEGRATED CIRCUIT CHIP

Donald L. May, Manhattan Beach, Calif., assignor to Circuit-Stik, Inc., Gardena, Calif.

Filed Nov. 11, 1971, Ser. No. 197,888
Int. Cl. H05k 5/00
U.S. Cl. 174—52 S 3 Claims



An improved microcircuit package is provided for integrated circuit chips, or the like, and which greatly simplifies the manner in which electrical connections may be made between the contacts on the chip and the terminal electrodes and other connections of the microcircuit. The package of the invention comprises a substrate of glass ceramic, polymide, or the like, having adhesive electric conductors formed on its surface, which conductors make connection between the contacts on the integrated circuit chip and the terminal electrodes, merely by pressing the chip over the adhesive electric conductors, the conductors serving additionally to hold and position the chip in the flat pack.

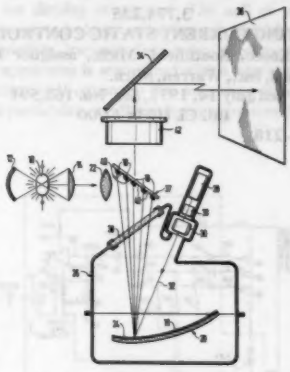
3,774,233

METHOD AND APPARATUS FOR REPRODUCING TELEVISION IMAGES FROM A VIDEO SIGNAL

Heinrich Dueringer, Watt-Regensdorf, Switzerland, assignor to Eidophor AG, Glarus, Switzerland

Filed Feb. 14, 1972, Ser. No. 225,830
Int. Cl. H04n 3/16, 5/74, 5/66
U.S. Cl. 178—7.5 D 13 Claims

A method and apparatus are provided for reproducing television images the apparatus comprising a cathode ray gun, a deformable control medium, an electron beam deflection system for deflecting the electron beam produced by the gun over the medium in a raster pattern, an apertured diaphragm between the gun and the medium which splits the electron beam into three separate beams and a beam focusing system responsive to an applied video signal to vary the spacing between the individual beams on the control medium in accordance with the information contained in the video signal. The medium is illuminated by a light source and light reflected



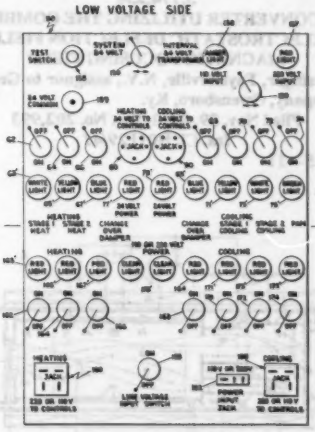
from the medium as it is deformed by the electron beam is passed through a Schlieren-optical system to an image screen.

3,774,234

SERVICING APPARATUS FOR HEATING/COOLING SYSTEMS

Richard L. Blair, 223 Summer, N.W., Grand Rapids, Mich.

Filed June 15, 1972, Ser. No. 263,151
Int. Cl. H02j 13/00
U.S. Cl. 307—149 11 Claims



A portable servicing apparatus for operating heating/cooling systems through various stages of operation while allowing the user to simultaneously observe the operation of the components of the system includes a plurality of electrical leads adapted to be coupled to a terminal board of the unit being serviced or tested. A power supply in the apparatus provides 110/220 volt alternating current or 24 volt alternating current power to the various leads in a predetermined and selectable manner that can be controlled by a plurality of switches to actuate the system components. Each switch includes an indicator light associated therewith to indicate to the user the stage of the system under test or the component which is actuated

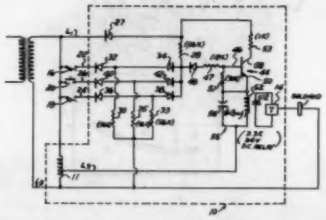
by the serving apparatus. Means are included for determining the proper operation of the indicator lamps to insure that an accurate indication is provided by the servicing apparatus.

3,774,235

ALTERNATING CURRENT STATIC CONTROL SYSTEM

William C. Kosco, Southfield, Mich., assignor to La Salle Machine Tool, Inc., Warren, Mich.

Filed July 14, 1971, Ser. No. 162,591
Int. Cl. H03k 17/00
U.S. Cl. 307—218 11 Claims



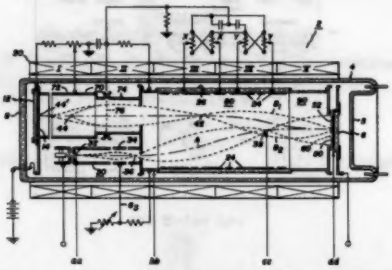
An alternating current solid state control system in which alternating current input signals are applied directly to the control system without requiring any initial signal conditioning so as to provide logic operational capabilities substantially the same as those obtainable using standard direct current static control devices. The voltage drop at a particular point in the system is compared to a reference voltage so that in response to a predetermined voltage drop condition corresponding to the logic control function to be obtained, a desired current flow is created.

3,774,236

IMAGE CONVERTER UTILIZING THE COMBINATION OF AN ELECTROSTATIC DEFLECTION FIELD AND A MAGNETIC FOCUSING FIELD

Kurt Schlesinger, Fayetteville, N.Y., assignor to General Electric Company, Owensboro, Ky.

Filed Nov. 29, 1971, Ser. No. 202,993
Int. Cl. H01j 29/41
U.S. Cl. 315—11 6 Claims



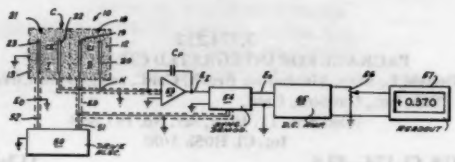
An image converter tube is provided wherein a pattern of radiation falling on a photoconductive target leaves a corresponding pattern of conductivity which is used to modulate a floodbeam which irradiates the entire target. The modulated return beam returns through the same fields as the floodbeam. However, by combining an electrostatic deflection field with a magnetic focus field the return beam does not follow the same path as the forward beam, but impinges on a phosphor viewing screen adjacent the source of the floodbeam.

3,774,237

DIFFERENTIAL METHODS AND APPARATUS FOR MEASURING DIELECTRIC CONSTANT TO DETERMINE A CONDITION OF A MATERIAL

Edward V. Hardway, Jr., Houston, Tex., assignor to Spearhead, Inc., Houston, Tex.

Filed Oct. 8, 1971, Ser. No. 187,793
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 28 Claims



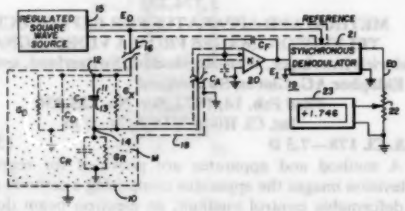
Method and apparatus responsive to conditions such as the moisture content or ingredients ratio of a material are disclosed in which the dielectric constant of a standard sample of such material of a reference moisture content or ingredients ratio is compared in a three-terminal differential capacitive device including two three-terminal capacitor probes with the dielectric constant of a test sample of such material of unknown moisture content or ingredients ratio. The comparison provides an electrical output signal proportional to the differences in moisture content or ingredients ratio of the test sample and the standard sample. For example, the differential capacitive device may be mounted in a differential capacitive cell which includes a standard sample cavity in which the standard sample is placed around the electrodes or conductive elements of one three-terminal capacitive probe and a test cavity in which the test sample is placed around the electrodes or conductive elements of a second three-terminal capacitive probe. Each probe of the differential capacitive device includes a conductive driven element, a conductive receptor element connected to an amplifier and maintained at virtual ground, and suitable shielding connected to a ground terminal. The test cavity is maintained at the same temperature as the standard sample cavity and the feed through capacity of each probe is a function of the dielectric constant of the material between their electrodes.

3,774,238

THREE-TERMINAL CAPACITIVE APPARATUS FOR REMOTELY RESPONDING TO A CONDITION OR DIELECTRIC PROPERTIES OF A MATERIAL

Edward V. Hardway, Jr., Houston, Tex., assignor to Spearhead, Inc., Houston, Tex.

Filed Dec. 9, 1971, Ser. No. 206,463
Int. Cl. G01r 27/26
U.S. Cl. 324—61 R 14 Claims



Three-terminal capacitive apparatus are disclosed which provide information concerning a condition of a material by responding to the dielectric properties of the material. A

three-terminal capacitor, which may be a cell or probe, may be used, for example, to measure the dielectric constant of a material, to determine the level of a material in a container, to determine the interface between liquid materials in a pipeline, or the proximity of a material to the probe. Each cell or probe includes a conductive driven element connected to a regulated square wave source, and a conductive receptor element connected to the input of a high gain amplifier with a capacitor in the feedback loop which maintains the receptor element at virtual ground. The output of the feedback amplifier is proportional to the feed through capacitance of the capacitive probe or cell. A synchronous demodulator, synchronized by the drive signal or a signal in phase with it, is connected to the feedback amplifier output and is used to produce a DC output signal used for display or control. The cell or probe is connected to associated electronics through shielded cables and may be remotely located from the electronics. Suitable mechanical apparatus is associated with a particular three-terminal capacitor cell or probe for mounting it in position to respond to a particular condition being monitored.

DESIGNS

NOVEMBER 20, 1973

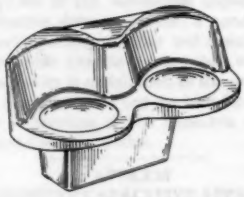
229,250
FRENCH FRIED POTATO PRODUCT
James E. Citti, Mound, and Carl S. Dienst, Edina, Minn., assignors to Ore-Ida Foods, Inc., Ontario, Oreg.
Filed Mar. 26, 1971, Ser. No. 128,638
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—21

229,251
SPORTS SHOE
Aubrey Askew, Southport, England, assignor to Dunlop Holdings Limited, Birmingham, England
Filed Aug. 23, 1971, Ser. No. 174,311
Claims priority, application Great Britain Feb. 23, 1971
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—309

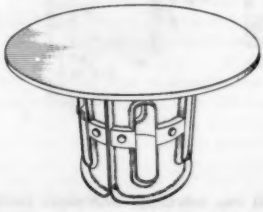
229,252
SHOE SOLE
Thomas A. Edmonds, Abingdon, Md., assignor to Bata Shoe Company, Inc., Belcamp, Md.
Filed Feb. 28, 1972, Ser. No. 230,178
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320

229,253
REVERSIBLE GOLF GLOVE
Nicholas C. Angelo, 2515 Shakespeare, Houston, Tex. 77025
Filed Apr. 7, 1971, Ser. No. 132,258
Term of patent 14 years
Int. Cl. D2—*06*
U.S. Cl. D2—361

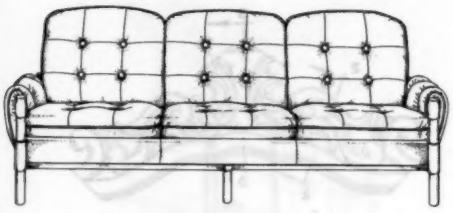
229,254
LOVE SEAT
Richard G. Reineman, Balboa, Calif., and George E. Schaefer, Muskegon, Mich., assignors to The Brunswick Corporation
Filed Dec. 15, 1970, Ser. No. 26,514
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—26



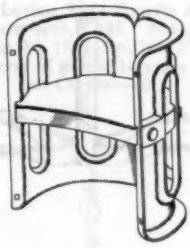
229,255
TABLE
David E. Workman, Orange, and James P. Sullivan, Tustin, Calif., assignors to Samsonite Corporation, Denver, Colo.
Filed May 4, 1972, Ser. No. 250,475
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—27



229,256
SOFA
Stapleton Long, 1629 Christmas Drive, Morristown, Tenn. 37814
Filed May 3, 1972, Ser. No. 250,114
Term of patent 3½ years
Int. Cl. D6—*02*
U.S. Cl. D6—63

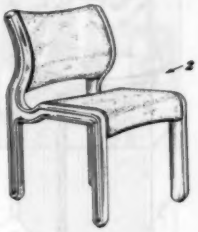


229,257
CHAIR
David E. Workman, Orange, and James P. Sullivan, Tustin, Calif., assignors to Samsonite Corporation, Denver, Colo.
Filed May 4, 1972, Ser. No. 250,474
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—70

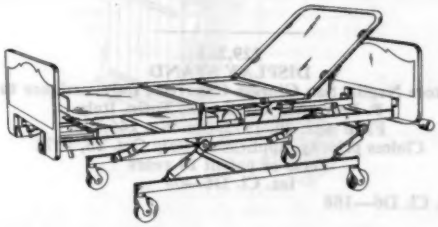


229,258
ARMCHAIR
Sven Hugo Svensson, Vinslov, Sweden, assignor to Skandi-Form AB, Vinslov, Sweden
Filed May 9, 1972, Ser. No. 251,851
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73

229,259
CHAIR
Donald T. Chadwick, 1812 Melhill, Los Angeles, Calif. 90049
Filed Feb. 8, 1971, Ser. No. 113,782
Term of patent 7 years
Int. Cl. D6—*02*
U.S. Cl. D6—78

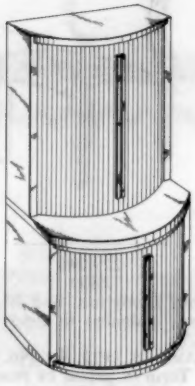


229,260
BED
Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 282,969
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



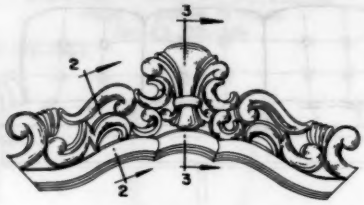
229,261
DISPLAY STAND
Andelfo J. Russo, 17 Colony Drive, Blauvelt, N.Y. 10913
Filed Nov. 23, 1971, Ser. No. 201,623
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—148

229,262
PANTRY CABINET
Ronald D. Pearson, 12320 98th Ave. E., Puyallup, Wash. 98371
Filed Dec. 8, 1971, Ser. No. 206,245
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—150



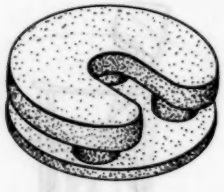
229,263
DISPLAY STAND
Ettore Neglia, San Giorgia Canavese, Italy, assignor to P. Ferrero & Co. S.p.A., Turin, Italy
Filed Apr. 20, 1972, Ser. No. 246,103
Claims priority, application Italy Oct. 25, 1971
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188

229,264
HEADER FOR FURNITURE
Richard M. Chapin, Charlotte, N.C., assignor to Dolly Madison Industries, Huntingburg, Ind.
Filed Jan. 7, 1972, Ser. No. 216,333
Term of patent 7 years
Int. Cl. D6—*06*
U.S. Cl. D6—192

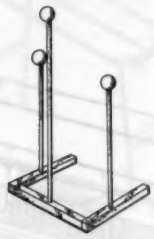


229,265
FURNITURE PEDESTAL
Gideon A. Kramer, Seattle, Wash., assignor to American Desk Manufacturing Company, Temple, Tex.
Filed July 1, 1971, Ser. No. 159,087
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—196

229,266
PILLOW
Anthony Zacharias, 623 N. Montory St., Alhambra, Calif. 91801
Filed July 17, 1972, Ser. No. 272,478
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

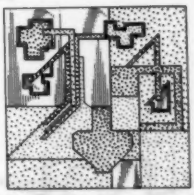


229,267
GARMENT RACK OR THE LIKE
William H. Brown, Jr., 724 Poplar Ave., Carrboro, N.C. 27510
Filed July 19, 1971, Ser. No. 164,181
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85



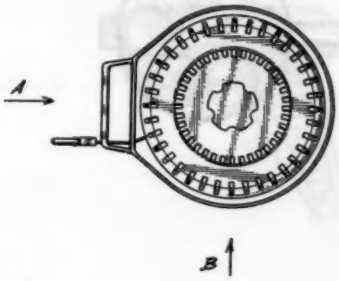
229,268
STRAND OF BEADS FOR A CURTAIN ELEMENT OR THE LIKE
Irving Levine, 9171 Gazette Ave., Chatsworth, Calif. 91311
Filed Aug. 16, 1971, Ser. No. 172,374
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205

229,269
NEEDLEPOINT CANVAS
Marcia Podell, 233 E. 69th St., New York, N.Y. 10021
Filed July 8, 1971, Ser. No. 160,989
Term of patent 3½ years
Int. Cl. D6—*13*
U.S. Cl. D6—269

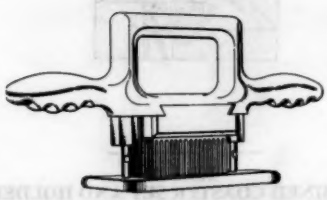


229,270
COMBINED COASTER SET AND HOLDER
Fred Press, White Plains, N.Y., assignor to Styson, Inc., New York, N.Y.
Filed July 9, 1971, Ser. No. 161,422
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—45

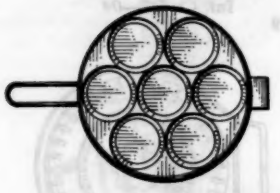
229,271
SALAD TOSSER OR SIMILAR ARTICLE
Alfred Stockli, Lontschegg, CH–8754 Netstal, Switzerland
Filed Feb. 8, 1971, Ser. No. 113,795
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—99



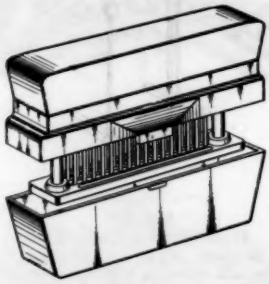
229,272
HAND OPERATED MEAT TENDERIZER
Fernand Michel Allinquant, 53 Avenue Le Notre, and Jacques Gabriel Allinquant, 12 Avenue Arouet, both of Sceaux, France
Filed July 27, 1971, Ser. No. 166,649
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—101



229,273
COMBINED FRYPAN AND COVER
Katharina Siren and Andrew Oskar Siren, both of 3436 15th St. SE., Calgary, Alberta, Canada
Filed Feb. 8, 1971, Ser. No. 113,797
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—95



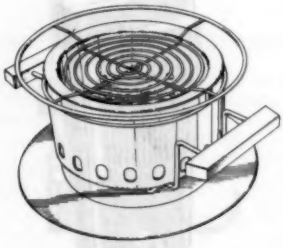
229,274
HAND OPERATED MEAT TENDERIZER
Fernand Michel Allinquant, 53 Avenue Le Notre, and Jacques Gabriel Allinquant, 12 Avenue Arouet, both of Sceaux, France
Filed July 27, 1971, Ser. No. 166,650
Claims priority, application France July 1, 1971
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—101



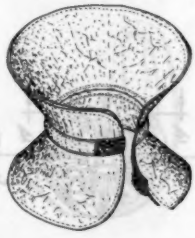
229,275
PORTABLE, COLLAPSIBLE STOVE
John E. Delahoussaye, Lafayette Parish, La. (103 Octahoula, Lafayette, La. 70501)
Filed Sept. 5, 1972, Ser. No. 286,066
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110

229,276
COOKING GRILL
David M. Schonbrun, 15047 Linden Ave. N., Seattle, Wash. 98133
Filed Apr. 17, 1972, Ser. No. 245,032
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107

229,277
BARBECUE GRILL
Chan Ming-Kong, Kowloon, Hong Kong, assignor to Chung Mei Manufactory Ltd., Tokwanan, Kowloon, Hong Kong
Filed Sept. 14, 1972, Ser. No. 288,909
Claims priority, application Great Britain May 3, 1972
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—110



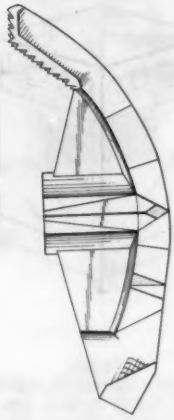
229,278
HANDLE FOR A FILTER TYPE BEVERAGE MAKER OR SIMILAR ARTICLE
Virginia Westover, Kentfield, Calif., assignor to Chemex Corporation, New York, N.Y.
Filed Jan. 3, 1972, Ser. No. 215,251
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—132



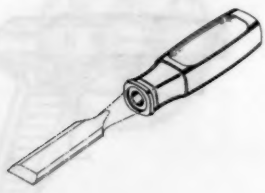
229,279
COMBINED LITTER CONTAINER AND ADVERTISING DISPLAY DEVICE
Walter Kay, 815 S. 18th St., Arlington, Va., and Raymond M. Poelvoorde, Birmingham, Mich.; said Poelvoorde assignor to said Kay
Filed Feb. 14, 1972, Ser. No. 226,383
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D7—191

229,280
HAND-HELD EXTRUDER
Anthony Sciascia, Easton, Pa., assignor to USM Corporation, Flemington, N.J.
Filed Oct. 8, 1971, Ser. No. 187,935
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30

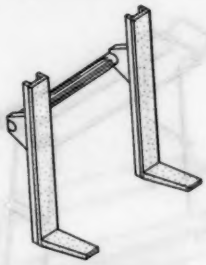
229,281
PIPE AND TUBE BENDER
John D. Benfield, 755 Lakeshore Road, Grosse Pointe Shores, Mich. 48236, and Richard R. Kozinski, 4120 Kevin Road NW., North Canton, Ohio 44720
Filed Sept. 24, 1971, Ser. No. 183,719
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—32



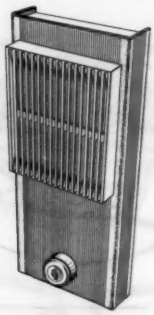
229,282
CHISEL HANDLE OR THE LIKE
Laird F. Covey, Easton, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jan. 10, 1972, Ser. No. 216,914
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—47



229,283
FURNITURE CARRIER
Donald B. Docherty, Rte. 1, Reynolds, Ill. 61279, and Paul L. Danner, Box 36, Illinois City, Ill. 61259
Term of patent 14 years
Filed May 14, 1971, Ser. No. 143,721
Int. Cl. D8—*05*
U.S. Cl. D8—71

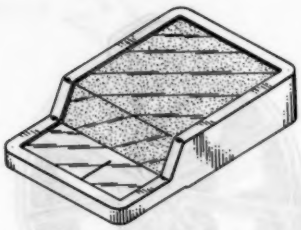


229,284
DOOR ALARM BOLT
Charles R. Suska, Roxbury, and Peter Thomson, Fairfield, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Sept. 9, 1971, Ser. No. 179,256
Term of patent 14 years
Int. Cl. D8—*07*; D29—*02*
U.S. Cl. D8—131



229,285
KNOB
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,267
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—139

229,286
CONTROL KNOB FOR AN APPLIANCE
Charles R. Tyke and Howard M. Meehan, Lexington, Ohio, assignors to Westinghouse Electric Corporation
Filed Nov. 16, 1972, Ser. No. 307,312
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—140



229,287
GARMENT BAG CARRIER
James G. Peters, 1 Penrose Lane, Colorado Springs, Colo. 80906
Filed Aug. 23, 1971, Ser. No. 174,290
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—154

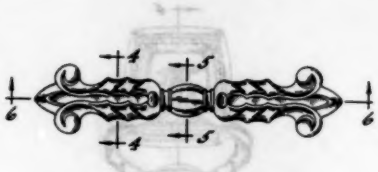
229,288
DOOR PULL
Sherwin L. Watford, 590 E. Buchtel Ave., Akron, Ohio 44304
Filed Oct. 16, 1972, Ser. No. 300,126
Term of patent 14 years
Int. Cl. D8—*06*; D4—*04*
U.S. Cl. D8—159

229,289
BAIL PULL
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,215
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—159

229,290
PASSAGE LEVER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,266
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—162

229,291
APPLIANCE HANDLE
Paul F. Frawley, Georgetown, Ontario, Canada, assignor to John Inglis Co. Limited, Toronto, Ontario, Canada
Filed July 21, 1972, Ser. No. 273,820
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166

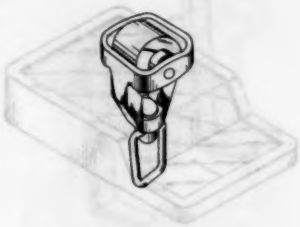
229,292
PULL
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,426
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—166



229,293
DOOR KNOCKER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,428
Term of patent 14 years
Int. Cl. D10—*06*; D8—*09*
U.S. Cl. D8—177

229,294
ESCUTCHEON PLATE FOR A PULL
La Verne E. Clayton, Rockford, Ill. (% Amerock Corporation, 4000 Auburn St., Rockford, Ill. 61101)
Original design application Aug. 12, 1970, Ser. No. 24,455. Divided and this application Mar. 25, 1971, Ser. No. 128,226
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179

229,295
CURTAIN RUNNER
Kiyotsune Miki, 73, 1-chome, Higashi-kagaya-cho, Sumiyoshi-ku, Osaka, Japan
Filed Oct. 14, 1971, Ser. No. 189,493
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—248

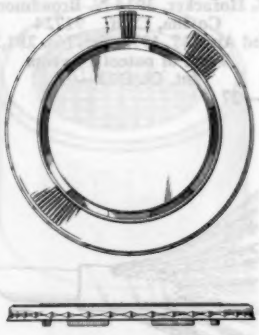


229,296
BOTTLE
Gary L. Cutler, East Lansing, Mich., assignor to Cutler Plastics Corporation, Lansing, Mich.
Filed Apr. 14, 1972, Ser. No. 244,316
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39

229,297
BOTTLE
Simon Jeruchim, Pomona, N.Y., assignor to Helena Rubinstein, Inc., New York, N.Y.
Filed Apr. 24, 1972, Ser. No. 247,241
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—168

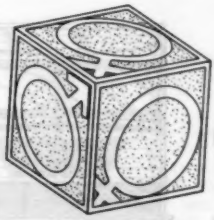
229,298
COVERED PIZZA TRAY
Jeno F. Paulucci, Duluth, Minn., assignor to Jeno's, Inc., Duluth, Minn.
Filed July 2, 1971, Ser. No. 159,575
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—184

229,299
LID FOR A PACKAGING CONTAINER OR THE LIKE
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed June 30, 1972, Ser. No. 267,944
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267

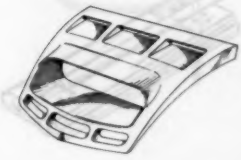


229,300
PACKAGING CONTAINER
Henry B. Carney, 5733 N. Sheridan Road, Chicago, Ill. 60626
Filed June 23, 1971, Ser. No. 156,169
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

229,301
SHIPPING CARTON
Michael P. Patterson, 814 Old Settler's Trail, Apt. 4, Hopkins, Minn. 55343
Filed July 21, 1971, Ser. No. 164,970
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—225

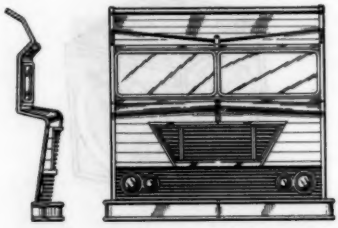


229,302
SNOWMOBILE ENGINE COWLING
Thomas Scott, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 10, 1972, Ser. No. 252,163
Claims priority, application Canada Apr. 5, 1972
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D14—24

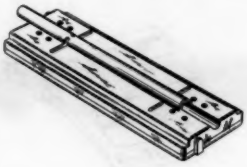


229,303
BICYCLE CARRIER FOR AUTOMOBILES
Robert J. Morris, 2564 Hutton Drive, Beverly Hills, Calif. 90210
Filed Mar. 10, 1972, Ser. No. 233,861
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27 C

229,304
COMBINATION FRONT PANEL UNIT AND BUMPER FOR A MOTOR HOME
Marvin E. Nerem, Forest City, Iowa 50436
Continuation of abandoned design application Ser. No. 25,509, Oct. 15, 1970. This application Oct. 12, 1971, Ser. No. 188,637
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D14—6 S

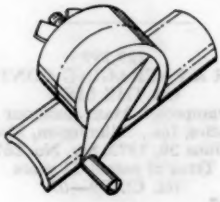


229,305
LIQUID-GAS SEPARATOR
David J. Rosenberg, Glen Cove, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.
Filed Sept. 8, 1972, Ser. No. 287,292
Term of patent 14 years
Int. Cl. D24—*99*; D23—*99*
U.S. Cl. D16—1 R

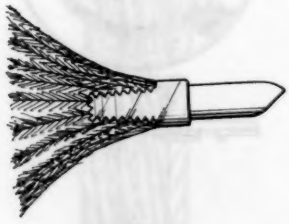


229,306
DECOY
Verilean L. McGraw, Clio, Mich., assignor of a fractional part interest to David L. McFall, Linden, Mich.
Filed Feb. 16, 1972, Ser. No. 227,001
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—18

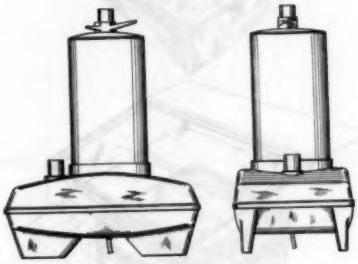
229,307
FISHING REEL
Marvin T. Shumate, 2316 Liverpool, Mesquite, Tex. 75149, and Bobby G. Williams, 9551 Crestshire, Dallas, Tex. 57217
Filed Oct. 22, 1971, Ser. No. 191,973
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—25



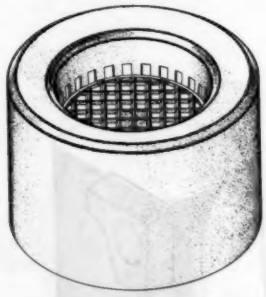
229,308
FISHING LURE
Otto W. Hofacker, 3934 N. Broadmoor Ave., Covina, Calif. 91724
Filed Aug. 17, 1972, Ser. No. 281,333
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



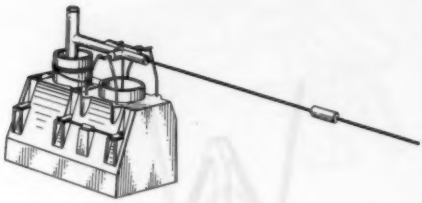
229,309
FILTERING UNIT FOR A SWIMMING POOL
Norbert L. Reiner, Wallingford, Conn., Donald Huffman, Montreal, Quebec, Canada, and Joseph Diemond, Simsbury, Conn., assignors to Colesco Industries, Inc., Hartford, Conn.
Original design application Oct. 22, 1970, Ser. No. 25,603, now Patent No. 223,449. Divided and this application Nov. 26, 1971, Ser. No. 202,729
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



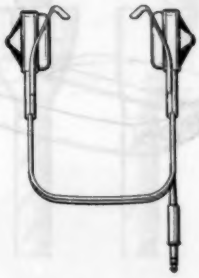
229,310
SKIMMER-COVER FOR SWIMMING POOLS
George Welborn, 1432 N. Sycamore, Hollywood, Calif. 90028
Filed Jan. 7, 1971, Ser. No. 104,831
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4



229,311
ELECTRICITY MEASURING DEMONSTRATOR
David E. Munn, Framingham, and Robert Maddestra, Hyde Park, Mass., assignors to Damon Corporation, Needham, Mass.
Filed Mar. 29, 1971, Ser. No. 129,297
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

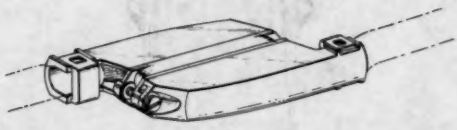


229,312
HEADPHONE
Tadashi Itagaki, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan
Filed Nov. 22, 1971, Ser. No. 201,265
Claims priority, application Japan June 21, 1971
Term of patent 7 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 H

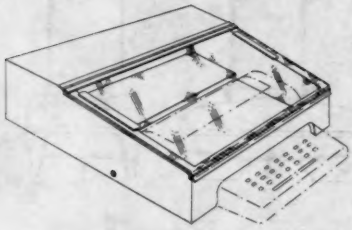


229,313
PENDULUM DEMONSTRATION DEVICE
Ronald William Ebdon, Gosport, England, assignor to E. S. Perry Limited, Gosport, England
Filed Sept. 1, 1971, Ser. No. 177,210
Claims priority, application Great Britain Mar. 19, 1971
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

229,314
TWO-PART ELECTRICAL CONNECTOR
Marnie Carlton Averitt, Timonium, Md., assignor to AMP Incorporated, Harrisburg, Pa.
Filed Nov. 23, 1971, Ser. No. 201,609
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 A

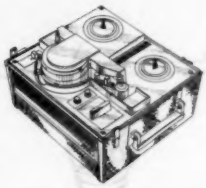


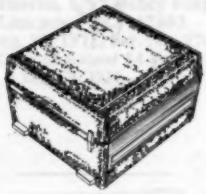
229,315
COMPUTER TERMINAL ACOUSTIC COVER
Charles H. Scott, Box 5242, Station "F," Ottawa 5, Ontario, Canada
Filed Apr. 21, 1972, Ser. No. 246,512
Claims priority, application Canada Oct. 26, 1971
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



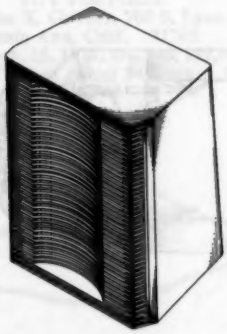
229,316
CASING FOR A HAND MANIPULABLE TRANSDUCER
Robert E. Burridge, Montclair, N.J., assignor to Litton Business Systems, Inc., Orange, N.J.
Original design application Oct. 28, 1969, Ser. No. 19,774, now Patent No. 224,541. Divided and this application Jan. 25, 1971, Ser. No. 109,726
Term of patent 14 years
Int. Cl. D14—*99*
U.S. Cl. D26—14 B

229,317
VIDEO TAPE RECORDER
Yoshio Yabuno, Toyonaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 1, 1971, Ser. No. 177,211
Claims priority, application Japan Mar. 5, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 B



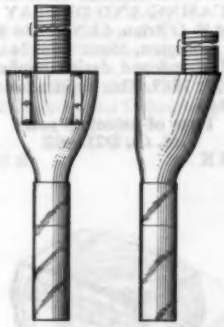


229,318
SPEAKER BOX
Yoshiaki Iida, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Mar. 9, 1972, Ser. No. 233,387
Claims priority, application Japan Sept. 10, 1971
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14 G



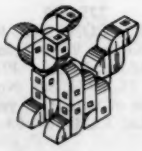
229,319
TELEVISION ANTENNA
Harvey R. Brandt and Nicholas Werner, Somerville, N.J., assignors to Gaven Electronics Division Antennacraft Company
Filed Nov. 15, 1972, Ser. No. 306,798
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F

229,320
ANIMAL FEED CONTROL RESERVOIR
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed Aug. 15, 1972, Ser. No. 280,820
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13

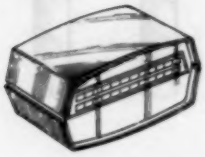


229,321
DOG SUPPORTED DISPOSABLE WASTE BAG FOR DROPPINGS
John P. Francis, 20 Boston St., Haverhill, Mass. 01830
Filed Mar. 27, 1972, Ser. No. 238,719
Term of patent 14 years
Int. Cl. D30—*99*
U.S. Cl. D30—99

229,322
FIGURE TOY OR SIMILAR ARTICLE
Hieronimus Robert Drieze, Gronausestraat 108, Enschede, Netherlands
Filed July 26, 1971, Ser. No. 166,341
Claims priority, application Netherlands Feb. 22, 1971
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

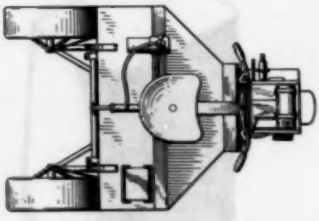


229,323
EXERCISE PERFORMANCE INDICATOR CASING AND DISPLAY
Robert E. O'Brien, 62 Norwald Road, Arlington, Mass. 02174
Continuation of abandoned design application Ser. No. 17,801, June 23, 1969. This application Mar. 26, 1971, Ser. No. 128,655
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 K



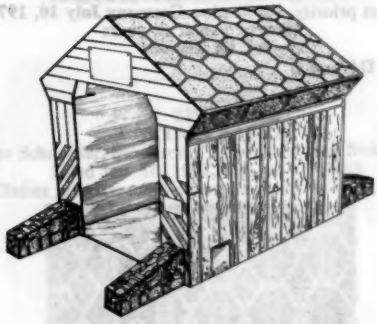
229,324
MOUNTED GAME PIECE FOR A FOOTBALL GAME BOARD
Spiros Zaphiratos, 4403 Rivard St., Montreal, Quebec, Canada
Filed Oct. 21, 1971, Ser. No. 191,582
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GP

229,325
SPIKING MACHINE
Cecil D. Carey, Humboldt, Kans., assignor to Humboldt Industries, Inc., Humboldt, Kans.
Filed Dec. 17, 1971, Ser. No. 209,482
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D35—2 A



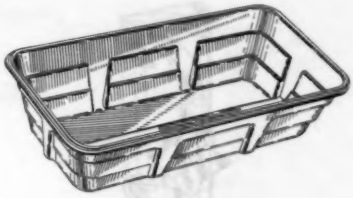
229,326
ELASTIC EXERCISER
Benny W. Davis and Carl H. Owens, Jacksonville, Fla., assignors to Owens Chemical Co., Inc., Jacksonville, Fla.
Filed Apr. 28, 1971, Ser. No. 138,397
Term of patent 3½ years
Int Cl. D21—*02*
U.S. Cl. D34—5

229,327
TOY COVERED BRIDGE
John R. Ternovan, 1712 Valley Forge Road, Lancaster, Pa. 17603
Filed Aug. 30, 1971, Ser. No. 176,431
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL



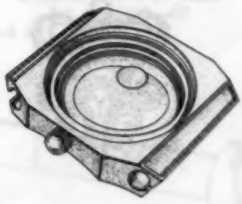
229,328
TOY PORPOISE
Charles K. Grieder, 700 S. Lyon, Santa Ana, Calif. 92705
Filed Nov. 15, 1971, Ser. No. 199,090
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B

229,329
PLANTER
George E. Jansen, Cedar Grove, N.J., assignor to The Pantasote Company of New York, Inc., New York, N.Y.
Filed Sept. 20, 1971, Ser. No. 182,296
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D35—3 A



229,330
WHEEL CHOCK
Ray P. Miles, Macedonia, Ohio, assignor to Copperloy Corporation, Independence, Ohio
Filed Oct. 6, 1971, Ser. No. 187,215
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D41—1 C

229,331
WATCH CASE
Jean-Jacques Favre, La Chaux-de-Fonds, Switzerland, assignor to Fabrique d'Horlogerie CHS. Tissot & Fils S.A., La Chaux-de-Fonds, Neuchatel, Switzerland
Filed July 7, 1972, Ser. No. 269,796
Claims priority, application Switzerland Jan. 18, 1972
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D42—8 R

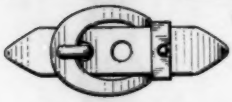


229,332
CONNECTING LINK
Emilia Torres Marti, 5 Olzinelles St., Barcelona, Spain
Filed Oct. 27, 1970, Ser. No. 25,688
Claims priority, application Spain June 24, 1970
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

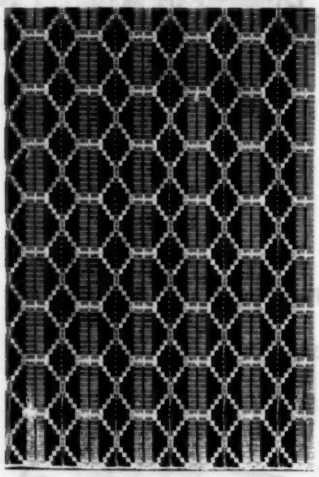
229,333
PENDANT
Richard B. Gaber, 3046 W. Logan Blvd., Chicago, Ill. 60647
Filed May 19, 1972, Ser. No. 255,319
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—15

229,334
PENDANT
Richard B. Gaber, 3046 W. Logan Blvd., Chicago, Ill. 60647
Filed May 19, 1972, Ser. No. 255,320
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—15

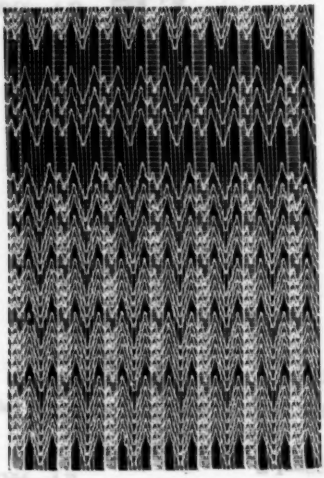
229,335
JEWELRY CLASP, OR SIMILAR ARTICLE
Lynn Steinman, Rye, N.Y. (% Accessocraft Products Corp., 46–48 Lawton St., New Rochelle, N.Y.)
Filed Sept. 28, 1972, Ser. No. 293,125
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4 A



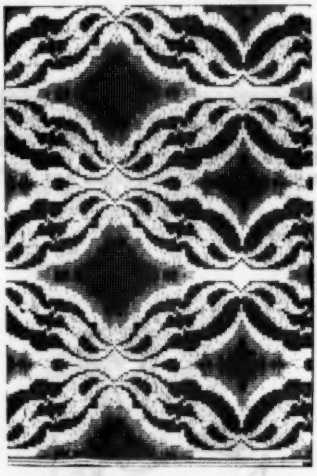
229,336
CURTAIN FABRIC
Peter Schroeder, Stockacker CH–8905, Arni, Switzerland
Filed Jan. 10, 1972, Ser. No. 216,880
Claims priority, application Germany July 10, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



229,337
CURTAIN FABRIC
Peter Schroeder, Stockacker CH–8905, Arni, Switzerland
Filed Jan. 10, 1972, Ser. No. 216,881
Claims priority, application Germany July 10, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



229,338
CURTAIN FABRIC
Peter Schroeder, Stockacker CH–8905, Arni, Switzerland
Filed Jan. 10, 1972, Ser. No. 216,883
Claims priority, application Germany July 10, 1971
Term of patent 14 years
Int. Cl. D5—*05*
U.S. Cl. D47—6 E



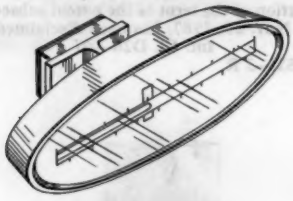
229,339
CIGARETTE LIGHTER
Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaishya, Saitama, Japan
Filed Mar. 13, 1972, Ser. No. 234,461
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

229,340
SHOE VENDING MACHINE
Kiyomitsu Ohno, Naka 2–9–9, Kunitachi-shi, Tokyo, Japan
Filed June 5, 1972, Ser. No. 260,057
Term of patent 14 years
The portion of the term of the patent subsequent to Nov. 20, 1987, has been disclaimed
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

229,341
LINE LEVEL
Robert F. West, Simsbury, and Laird F. Covey, Easton, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed June 12, 1972, Ser. No. 261,694
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D52—6 A

229,342
WEATHER VANE
Jack Fickler, 2705 S. 106th St., Omaha, Nebr. 68124
Filed Nov. 26, 1971, Ser. No. 202,723
Term of patent 14 years
Int. Cl. D10—*06*
U.S. Cl. D52—6 D

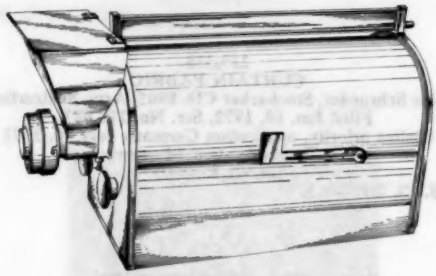
229,343
THERMOMETER
Donald J. Shanklin, Granada Hills, Calif., assignor to Orion Industries, Inc.
Filed Apr. 3, 1972, Ser. No. 240,905
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—7 R



229,344
SHOE VENDING MACHINE
Kiyomitsu Ohno, Naka 2–9–9, Kunitachi-shi, Tokyo, Japan
Filed June 5, 1972, Ser. No. 260,055
Term of patent 14 years
The portion of the term of the patent subsequent to Nov. 20, 1987, has been disclaimed
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

229,345
SHOE VENDING MACHINE
Kiyomitsu Ohno, Naka 2–9–9, Kunitachi-shi, Tokyo, Japan
Filed June 5, 1972, Ser. No. 260,056
Term of patent 14 years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

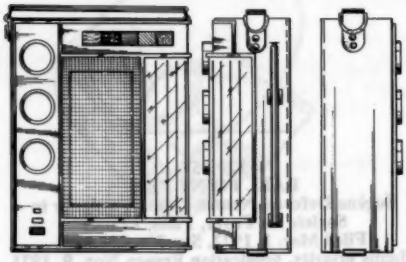
229,346
PEANUT BUTTER GRINDER
Robert L. Zimmerman, 19 Viola Road, Longmeadow, Mass. 01106
Filed Nov. 26, 1971, Ser. No. 202,717
Term of patent 3½ years
Int. Cl. D15—*08*
U.S. Cl. D55—1 B



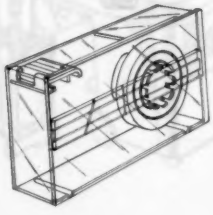
229,347
RADIO RECEIVER OR SIMILAR ARTICLE
Daisuke Kajiwara, Fukuoka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 12, 1971, Ser. No. 188,653
Claims priority, application Japan Apr. 15, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B

229,348
TELEVISION RECEIVER
Kazuhiro Ueda, Takatsuki, Yasunobu Nakamura, Suita, Osamu Sugihara and Tadashi Sumino, Takatsuki, and Makoto Terauchi and Kiyoshi Suzuki, Ibaragi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed Dec. 17, 1971, Ser. No. 209,499
Claims priority, application Japan June 18, 1971
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

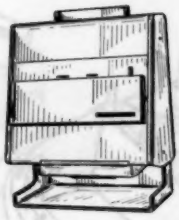
229,349
RADIO
Frank Nagabashi, 71 Deuvoux Road, Hong Kong
Filed Feb. 28, 1972, Ser. No. 230,168
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



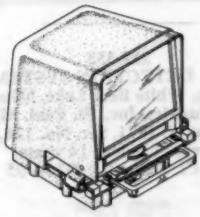
229,350
COMBINED SPLICING TAPE DISPENSER AND RECORDING TAPE SPLICING BLOCK
Charles L. Alden, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 9, 1971, Ser. No. 179,257
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 Q



229,351
ELECTROSTATIC COPIER
Karl Gustav Zeuthen, Gentofte, Denmark, assignor to Zeuthen & Aagaard A/S, Glostruk, Denmark
Filed Apr. 18, 1972, Ser. No. 245,294
Claims priority, application Denmark Apr. 11, 1972
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 Q



229,352
MICROFICHE READER
Hideto Furuoka, Tokyo, Japan, assignor to Gakken Co., Ltd., Tokyo, Japan
Filed Mar. 14, 1972, Ser. No. 234,693
Claims priority, application Japan Jan. 13, 1972
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N

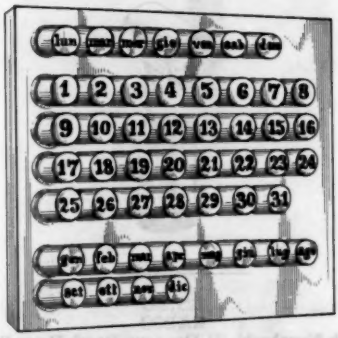


229,353
AIRCRAFT
Walter E. Fellers, Los Angeles, Robert W. Bratt, Palos Verdes Estates, and Michael G. Huben and Don M. Heinze, Los Angeles, Calif., assignors to Northrop Corporation, Los Angeles, Calif.
Filed June 30, 1971, Ser. No. 158,658
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D71—1 F

229,354
AMUSEMENT PARK BOAT
Edgar A. Morgan, Palo Alto, Calif., assignor to Arrow Development Co., Inc., Mountain View, Calif.
Filed May 22, 1972, Ser. No. 255,959
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1 Q

229,355
FIRE DETECTION SYSTEM
Thomas A. Rausch, White Bear Lake, Minn., assignor to Elan Industries, Inc., St. Paul, Minn.
Filed Mar. 3, 1971, Ser. No. 120,794
Term of patent 14 years
Int. Cl. D29—*01*; D26—*05*
U.S. Cl. D72—1 R

229,356
CALENDAR
Della Beffa Giorgio, Turin, Italy, assignor to International Designers Group, Inc., New York, N.Y.
Filed May 7, 1971, Ser. No. 141,468
Term of patent 14 years
Int. Cl. D19—*03*
U.S. Cl. D74—5


lun mar mer gio ven sab dom
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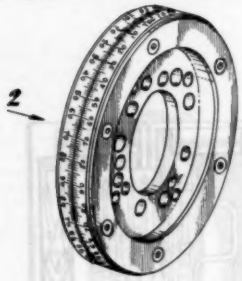
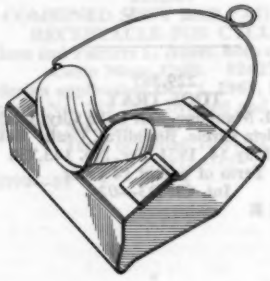
9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31
gen feb mars apr mai giu lug aou
set ott nov dic

229,357
BALL POINT PEN
Eugène Defores, Nantes, France, assignor to Societe Le Foyer, Paris, France
Filed Mar. 1, 1972, Ser. No. 231,081
Claims priority, application France Nov. 9, 1971
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D74—17 B

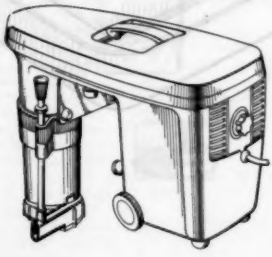
229,358
CRANKSHAFT CALIBRATOR DEGREE WHEEL
John W. Burkholder, 465 N. Encinitas Ave., Monrovia, Calif. 91016
Filed Aug. 8, 1972, Ser. No. 278,799
Term of patent 7 years
Int. Cl. D15—*01*
U.S. Cl. D77—1 A



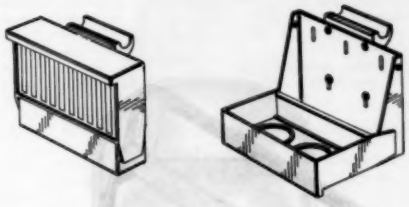
229,359
CERVICAL TRACTION HALTER
Frank J. Nightingale, 3178 University Ave., San Diego, Calif. 92104
Filed Dec. 9, 1971, Ser. No. 206,594
Term of patent 14 years
Int. Cl. D24—*04, 99*
U.S. Cl. D83—1 E



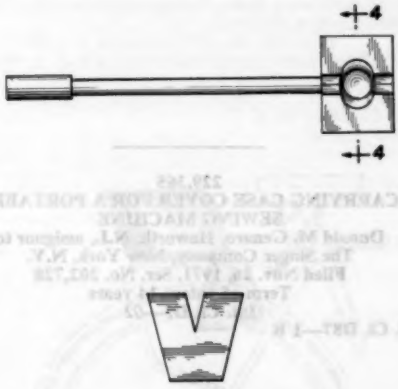
229,360
HYDROTHERAPY UNIT
Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co.
Filed Feb. 16, 1973, Ser. No. 333,387
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D83—1 C



229,361
FOLDABLE TRAY AND CONTAINER ATTACHMENT FOR AN INVALID CHAIR
Lester H. Bennett, 11482 Foster Road, Rossmoor, Calif. 90720
Filed Oct. 26, 1971, Ser. No. 192,702
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D83—1 R

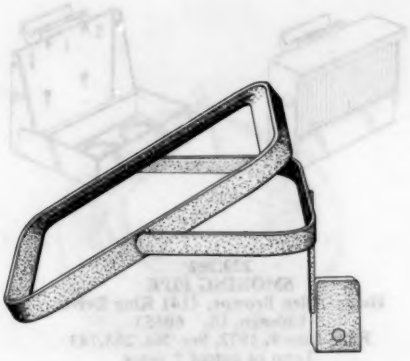


229,362
SMOKING PIPE
Henry Allen Browne, 4141 King Drive, Chicago, Ill. 60653
Filed June 9, 1972, Ser. No. 263,743
Term of patent 7 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 A

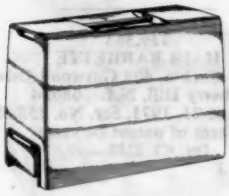


229,363
HAIR BARRETTE
John R. Corbin, 404 Garwood Drive, Cherry Hill, N.J. 08034
Filed June 21, 1971, Ser. No. 155,381
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D86—10 J

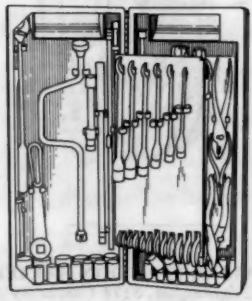
229,364
TOILET MIRROR FRAME
Sven-Eric Juhlin, Gustavsberg, Sweden, assignor to AB Gustavsbergs Fabriker, Gustavsberg, Sweden
Filed Dec. 27, 1971, Ser. No. 212,893
Claims priority, application Sweden June 28, 1971
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D86—10 H



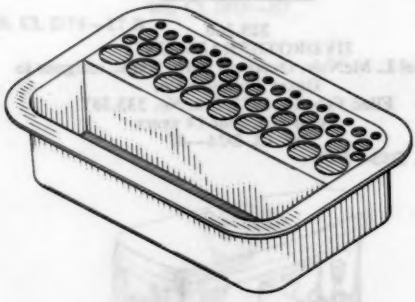
229,365
CARRYING CASE COVER FOR A PORTABLE SEWING MACHINE
Donald M. Genaro, Haworth, N.J., assignor to The Singer Company, New York, N.Y.
Filed Nov. 26, 1971, Ser. No. 202,728
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



229,366
COMBINED SET OF TOOLS AND CARRYING CASE THEREFOR
Everett R. Yonce, 259 E. 12th St., Oakland, Calif. 94606
Filed May 3, 1971, Ser. No. 139,998
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



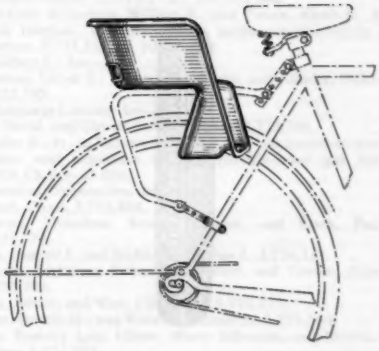
229,367
TOOL TRAY
Datus H. Maughan, Salt Lake City, Utah (2994 S. Vista Circle, Bountiful, Utah 84010)
Filed May 14, 1971, Ser. No. 143,738
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



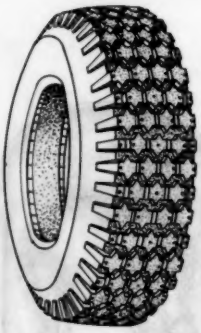
229,368
FRUIT JUICE EXTRACTOR
Paul Marrié, Dijon, France, assignor to Etud S.A., Quetigny, France
Filed Dec. 30, 1971, Ser. No. 214,531
Claims priority, application France July 5, 1971
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D89—1 A

229,369
COMBINED SISSY BAR PAD AND RECEPTACLE FOR CYCLES
Henry Akers and Patricia L. Akers, both of 271 Knox St., Costa Mesa, Calif. 92627
Original design application Oct. 1, 1969, Ser. No. 19,359, now Patent No. 219,761. Divided and this application Dec. 28, 1970, Ser. No. 26,677
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D90—15

229,370
CHILD CARRIER FOR BICYCLE
Irvin E. Berger, Skokie, and John Peter Ronvik, Palos Heights, Ill., assignors to Sears, Roebuck and Co., Chicago, Ill.
Filed Apr. 14, 1972, Ser. No. 244,318
Term of patent 14 years
Int. Cl. D6—*01*; D12—*16*
U.S. Cl. D90—16

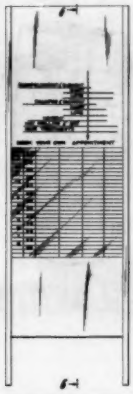


229,371
TIRE
Mervin Shughart, Carlisle, Pa., assignor to Carlisle Tire & Rubber, Division of Carlisle Corporation
Filed June 26, 1972, Ser. No. 266,380
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R



229,372
TIRE FOR A VEHICLE WHEEL
Eiji Nakazaki, Kakogawa, and Fumio Yumoto and Nobuyuki Sakamoto, Kobe, Japan, assignors to Dunlop Limited, London, England
Filed July 31, 1972, Ser. No. 276,445
Claims priority, application Japan Feb. 2, 1972
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

229,373
APPOINTMENT SIGN FOR A BEAUTY SALON
David Rose, Flushing, N.Y., assignor to The Glemby Company, Inc., New York, N.Y.
Filed Dec. 6, 1971, Ser. No. 205,481
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



229,374
PHOTOGRAPHIC ALBUM
Jay I. Sher, 271 S. Beverly Drive, Beverly Hills, Calif. 90212
Filed June 14, 1971, Ser. No. 153,141
Term of patent 14 years
Int. Cl. D19—*04*
U.S. Cl. D97—2

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF NOVEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Granier, Hector, 3,773,092.

Aaen, Olav; Friend, Kenneth J.; Hackbarth, Eugene; and Ward, Harry M., III, to Outboard Marine Corporation. Snowmobile having noise-suppression engine compartment. 3,773,127, Cl. 180-5.00r.

Aaron, Charles; and Virta, Aimo K., to Midland-Ross Corporation. Machinery and process for assembling a printing machine belt. 3,773,594, Cl. 156-299.000.

Abdaliah, Abdulmuniem H., to Dow Chemical Company, The. Acetophenone anorectic method. 3,773,957, Cl. 424-273.000.

Abegg, Jean Louis: *See—*
Kalopissis, Gregoire; Abegg, Jean Louis; de Beaulie, Henry; and Ghilardi, Guiliana, 3,773,056.

Abel, Martin Louis, to Permawick Company, Inc. Force transducer. 3,774,058, Cl. 310-15.000.

Abels, Folkert: *See—*
Heeman, Andreas Maria; Abels, Folkert; and Kraan, Arie Wilhelm, 3,774,020.

Abendroth, John Carl. Refrigeration to avoid contamination by a hydrocarbon. 3,772,895, Cl. 62-46.000.

Abu El-Haj, Marwan Jawdat: *See—*
Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, 3,773,950.

Abushanab, Elie: *See—*
Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, 3,773,950.

Ackerman, Robert A.: *See—*
Johnson, Benjamin Allen; Royal, Stephen L.; and Ackerman, Robert A., 3,773,302.

Acme General Corporation: *See—*
Jerila, Torsti T. T., 3,773,370.

Acme-Cleveland Corporation: *See—*
Rebish, Edward J., 3,773,299.

Adam, Wolfgang E.; and Barrat, Christian, to Procter & Gamble Company, The. Detergent composition containing enzymes. 3,773,674, Cl. 252-99.000.

Adams, Richard C.: *See—*
Goldman, Irving M.; O'Shea, Daniel P.; Adams, Richard C.; and Nakanishi, Susumu, 3,773,757.

Adams, Werner: *See—*
Immel, Waldemar; Laser, Lorenz; and Adams, Werner, 3,773,631.

Adams, William V., to Durametallic Corporation. Bellows seal. 3,773,337, Cl. 277-89.000.

Addressograph-Multigraph Corporation: *See—*
Kiener, Michael A.; and Richman, Edward B., 3,773,551.

Adler, Roman; and Gebhardt, Hartmut, to Siemens Aktiengesellschaft. Cross switching circuitry for four-wire exchange installations. 3,773,982, Cl. 179-18.0af.

Advanced Air, Inc.: *See—*
Kurz, John C., 3,773,086.

Ael Food Automation, Inc.: *See—*
Longenecker, John G.; Rubio, Manuel J.; and Robustelli, Ciro M., 3,773,520.

Aerojet-General Corporation: *See—*
Luiten, Peter H.; and Regus, John U., 3,773,392.

Agfa-Gevaert Aktiengesellschaft: *See—*
Pfeifer, Josef; Eigner, Horst; and Hofmann, Wilfried, 3,773,409.
Taeffner, Klaus; and Luhrig, Hermann, 3,773,598.

Agfa-Gevaert N.V.: *See—*
Poot, Albert Lucien; Van Besauw, Jan Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, 3,773,512.

Ahamed, Syed Vickar, to Bell Telephone Laboratories, Incorporated. Field-accessed, single-wall domain apparatus utilizing interacting shift register loops. 3,774,153, Cl. 340-146.1al.

Ainsworth, Oliver C., Jr.; Lochary, Joseph F.; and Stain, Shelton D., Jr., to Dow Chemical Company, The. Process for improving the color of Ziegler olefin polymers. 3,773,743, Cl. 260-94.90f.

Air Land Systems Co.: *See—*
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Air Preheater Company, Inc., The: *See—*
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Airoil Burner Company (GB) Limited: *See—*
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Aisin Seiki Kabushiki Kaisha: *See—*
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Aizawa, Hironori: *See—*
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Aizu, Keiichiro; Kumada, Akio; Yumoto, Hiroshi; Ashida, Sakichi; and Furuhata, Yoshio, to Hitachi, Ltd. Compound ferroelectric-ferroelastic crystal. 3,773,898, Cl. 423-263.000.

Ajinomoto Co., Inc.: *See—*
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Isashi; Hiyama, Takami; and Matsunaga, Takao, 3,773,790.

Akashi, Thomas M.: *See—*
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Akhmedov, Rustam Berovich; Goldberg, Ilya Mordukhovich; and Mingarecv, Fedor Mingalimovich. Gas burner. 3,773,459, Cl. 431-280.000.

Aktiebolaget Bofors: *See—*
Andersson, John-Erik, 3,772,912.
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Johansson, Arnold Johannes, 3,772,960.

Aktiebolaget Svenska Flaktfabriken: *See—*
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Aktiengesellschaft Brown, Boveri & Cie: *See—*
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Alberto-Culver Company: *See—*
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Albrecht, Rudolf; Kessler, Jans-Joachim; and Schroder, Eberhard, to Schering AG. Tetrahydro-oxofuro quinolinecarboxylic acid derivatives. 3,773,769, Cl. 260-287.00r.

Alcott, David K., to Haulamatic Corporation. Powered winch. 3,773,294, Cl. 254-187.000.

Aldenhoff, Bernard J., to Smith, A. O., Corporation. Multiple arc direct current constant potential welding generator. 3,774,011, Cl. 219-131.00r.

Alessio, Robert M.; Palmer, Myron N.; and Puzniak, Thomas J., to Gulf Research & Development Company. Analyzer for third elements in a hydrocarbon sample. 3,774,027, Cl. 250-363.000.

Ali, Mir Akbar; Bratschun, William R.; and Pincus, Alexis G., to IIT Research Institute. UV transmitting lanthanum-zinc-borate glass composition. 3,773,528, Cl. 106-47.00r.

Alinder, Gilbert L.: *See—*
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Allen & Hanburys Limited: *See—*
Jack, David; and Glover, Ernest Edward, 3,773,746.

Allen, Walter R., Jr., to Research-Cottrell, Inc. Gas quencher-scrubber and water seal apparatus for hot particle-laden gas sources. 3,773,308, Cl. 266-15.000.

Allied Chemical Corporation: *See—*
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Sifniades, Stylianos; Fuhrmann, Robert; and Tunick, Allen A., 3,773,786.
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Allmonna Svenska Elektriska Aktiebolaget: *See—*
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Alosi, Michael; and Kellenbeck, Rieta M. Hair spray facial shield. 3,772,707, Cl. 2-174.000.

Alpert, Seymour B.: *See—*
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Alsup, Richard E. Motorist's emergency warning apparatus. 3,772,811, Cl. 40-129.00c.

Altmeppen, Johannes, to Westinghouse Bremsen- und Apparatebau G.m.b.H. Pressure limiting device for vehicular brake systems. 3,772,890, Cl. 60-585.000.

Alumiline Corporation, The: *See—*
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Aluminum Company of America: *See—*
Butcher, Louis M., 3,773,585.
McGinnis, Michael K.; and Wallace, Paul F., 3,773,477.

Russell, Allen S.; and Knapp, Lester L., 3,773,643.
Amato, Richard A.; and Chabot, Leo L., to Electrospin Corporation, mesne. Fiber conveying device for an open-end spinning apparatus. 3,772,868, Cl. 57-58.950.
Ambrose, Donald B., to Hausman, Martin C. Wear rod. 3,773,343, Cl. 280-28.000.
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Meyers, George Leroy; and Mueller, David Charles, 3,773,245.
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American Smelting and Refining Company: *See—*
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American Telecommunications Corporation: *See—*
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American Velcro, Inc.: *See—*
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Captain, Khushroo M.; Edwards, John H.; and Russell, David B., 3,773,597.
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AMF Incorporated: *See—*
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Amodei, Juan Jose; and Staebler, David Lloyd, to RCA Corporation. Process for fixing holographic patterns in electro-optic crystals and the crystals produced thereby. 3,773,400, Cl. 350-3.500.
AMP Incorporated: *See—*
Lockard, Joseph Larue, 3,774,015.
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Amsler, Joachim, to Sprecher & Schuh AG. Arc electrode, especially for vacuum switches. 3,773,993, Cl. 200-144.00b.
Anchor Hocking Corporation: *See—*
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Andersen, Marinus Leland, to Hach Chemical Company. Liquid conductivity measuring apparatus. 3,774,104, Cl. 324-30.00b.
Anderson Company, The: *See—*
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Anderson, John Dale: *See—*
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Anderson, Lloyd E.; Thompson, Donlin; and Alinder, Gilbert L. Heavy fabric cutting tool guide. 3,772,793, Cl. 33-174.00g.
Anderson, Robert F.: *See—*
Auer, John H., Jr.; Sibley, Henry C.; and Anderson, Robert F., 3,774,025.
Anderson, Rodney H., to Caterpillar Tractor Company. Unitary coupling for articulated vehicles. 3,773,129, Cl. 180-14.00b.
Anderson, Roger C. Mining machine. 3,773,384, Cl. 299-76.000.
Anderson, Thomas P., to Microseal Corporation. Film record card system. 3,773,511, Cl. 96-75.000.
Anderson, Weston A., to Varian Associates. Apparatus for analyzing environmental gases. 3,772,909, Cl. 73-23.100.
Anderson, William G. Freezer with removable conveyor and refrigerating means. 3,772,898, Cl. 62-302.000.
Andersson, John-Erik, to Aktiebolaget Bofors. Load cell comprising two movable members in a measuring direction. 3,772,912, Cl. 73-141.00a.
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Andruski, Ryszard; Jedraska, Maria; Lichtensztejn, Hersz; and Leszczynski, Zbigniew, to Instytut Pryzemyslu Organicznego. Method of preparing dimethylsulphoxide. 3,773,838, Cl. 260-607.00a.
Angel, Alta M.; and Angel, Kenneth G. Paper coveralls with stitched-in feet covers. 3,772,705, Cl. 2-79.000.
Angel, Kenneth G.: *See—*
Angel, Alta M.; and Angel, Kenneth G., 3,772,705.
Antonaccio, Jack A., to Buildex Incorporated. Sliding support with adjustable shock block. 3,773,395, Cl. 308-3.800.
Aoshima, Kiyoji: *See—*
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Applanalp, Robert Henry. Self rotating airplane tire. 3,773,283, Cl. 244-103.00s.
Applegate, Robert D. Apparatus for controlled incineration air supply. 3,773,000, Cl. 110-8.00r.
Applied Magnetics Corporation: *See—*
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Arai, Naoki: *See—*
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Araki, Kunio: *See—*
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Aranson, Joel C., to Aranson, Joel C., Aranson, Milton H. and Hersch, Ira I. Roller skate toe stops. 3,773,339, Cl. 280-11.200.
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Arens, Alfred: *See—*
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Argabright, Perry A.; and Phillips, Briar L., to Marathon Oil Company. Isocyanurate and halogen-containing polyisocyanates. 3,773,695, Cl. 260-2.5aw.
Arimoto, Minoru; and Fukui, Takao. Golf-ball heater. 3,773,461, Cl. 432-185.000.
Arkell, Alfred: *See—*
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Armco Steel Corporation: *See—*
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Arndt, Heinz-Herbert; and Belke, Franz, to Licentia Patent-Verwaltungs-G.m.b.H. Method of manufacturing a semiconductor device. 3,772,770, Cl. 29-583.000.
Arnes, Lyle L., to Tenneco Inc. Lift saddle for transmission jack. 3,773,293, Cl. 254-134.000.
Arneson, Howard M., to Arneson Products Inc. Jet cleaning apparatus for boats. 3,773,059, Cl. 134-123.000.
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Aronoff, Michael S.; and Workman, Michall K. Specimen obtaining, culturing and testing device having a gas environment. 3,773,035, Cl. 128-2.00w.
Arrington, Thomas Lonnie, to Dresser Industries, Inc. Gripper for a drill rod handling apparatus. 3,773,188, Cl. 214-1.00p.
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Arvey Corporation: *See—*
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Arya, Vishwa Prakash, to Ciba-Geigy AG. 1-Phenyl, 4-(tetrahydropyridyl, hydroxy-alkyl)-pyrazoles. 3,773,772, Cl. 260-294.80r.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
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Asaka, Nobuji: *See—*
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Asano, Hiroaki; and Otsu, Ikuo, to Toyoda Koki Kabushiki Kaisha. Automatic measuring device. 3,772,829, Cl. 51-5.000.
Ashida, Sakichi: *See—*
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Ashkin, Arthur; and Ippen, Erich Peter, to Bell Telephone Laboratories, Incorporated. Wavelength selective laser apparatus. 3,774,121, Cl. 331-94.500.
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Atlas Chemical Industries, Inc.: *See—*
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Atwood, Lyle C.; and Slattery, Robert E., to Atwood Vacuum Machine Company. Vehicle door latch with forked latching rotors. 3,773,368, Cl. 292-48.000.

Atwood Vacuum Machine Company: *See—*
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Aubert, Lawrence Joseph, to Procter & Gamble Company, The. Novel suspending agent composition for use in powder aerosol compositions and process for preparation. 3,773,683, Cl. 252-305.000.

Aubert, Michel, to Commissariat a l'Energie Atomique. Nuclear reactor comprising a core cover. 3,773,616, Cl. 176-30.000.

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Auer, John H., Jr.; Sibley, Henry C.; and Anderson, Robert F., to General Signal Corporation. Vehicle control system. 3,774,025, Cl. 246-63.00a.

Augustin, Jan, to Vyskumny ustav mechanizacie a automatizacie. Method for the control of the passage of the working medium for electric working processes and arrangement for executing this method. 3,773,636, Cl. 204-129.250.

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Austin, Harvie Darrell. Telescope trailer tongue. 3,773,357, Cl. 280-482.000.

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Avco Corporation: *See—*
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Averitt, Marnie C. Hand clipper. 3,772,783, Cl. 30-186.000.

Aviezer, Zvi: *See—*
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Avis, Robert P., to Scott Paper Company. Glyoxal-acrylamide-formaldehyde-urea wet strength. 3,773,612, Cl. 162-168.000.

AWT Systems, Inc.: *See—*
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Ayerst, McKenna and Harrison Limited: *See—*
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Babcock & Wilcox Company, The: *See—*
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Babson Bros. Co.: *See—*
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Backus, Harold A., to N L Industries, Inc. Radiation shielding means joint. 3,774,037, Cl. 250-506.000.

Bader, Erich; and Rohe, Lothar, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process of making polyester polyols. 3,773,822, Cl. 260-484.00a.

Bader, Jorg; and Gatzi, Karl, to Ciba-Geigy Corporation. Fungicidal compositions containing 3-arylimino-4-chloro-5-amino-1,2-dithiols. 3,773,934, Cl. 424-248.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
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Badoux, Daniel; and Carry, Robert. Apparatus for extracting, stacking and discharging moulded cups, jars and similar from moulding apparatus. 3,773,457, Cl. 425-388.000.

Bagcraft Corporation of America: *See—*
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Bahre, Werner, to Kabel- und Metallwerke Gutehoffnungshutte. Apparatus for cutting metal sheath. 3,772,780, Cl. 30-90.200.

Baker, Joseph W.; and Schumacher, Ignatius, to Monsanto Company. Preparation of esters of phosphorus acids. 3,773,866, Cl. 260-973.000.

Baker, Martin L.; and Eufusia, Eugene A., to Optical Coating Laboratory, Inc. Method of monitoring the rate of depositing a coating solely by its optical properties. 3,773,548, Cl. 117-106.00r.

Baker, Robert F.; and Weaver, Ebon P., to Uniroyal, Inc. Method for extrusion of cellular core integral-skin plastics. 3,773,877, Cl. 264-48.000.

Baklien, Asbjorn; and Gregory, Jocelyn Margaret, to Imperial Chemical Industries of Australia and New Zealand, Limited. Process for controlling fungi. 3,773,945, Cl. 424-301.000.

Ball, Eric, to Dunlop Holdings Limited. Hose pipes. 3,773,088, Cl. 138-129.000.

Ballinger, Dale O.; and Stauffer, Norman L., to Honeywell Inc. Transverse recorder. 3,774,226, Cl. 346-35.000.

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Barak, Anthony J.; and Champion, Walter P. Method of constructing indoor or patio green and a plug for the golf cup-thereof. 3,772,841, Cl. 52-741.000.

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Barbera, Edmund C. Building wall construction. 3,772,842, Cl. 52-426.000.

Barboni, Philip G., to Singer Company, The. Digital frame counter. 3,774,160, Cl. 340-172.500.

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Barrat, Christian: *See—*
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Barratt, William C. Apparatus for producing cement sheets. 3,773,447, Cl. 425-86.000.

Barraud, Pierre, to Industrialized Systems Corporation. Modular multiple-unit building construction. 3,772,834, Cl. 52-79.000.

Bartell, Charles: *See—*
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Barthelemy, Pierre: *See—*
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Batten, Samuel Veale; Gill, Sydney John; and Milne, David Graeme, to British Titan Limited. Production of pigments. 3,773,536, Cl. 106-309.000.

Batter, John F., Jr.; Stella, Joseph A.; and Held, Albert W., to Polaroid Corporation. Photographic film cassette employing coated processor valve. 3,772,975, Cl. 95-13.000.

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Bausch & Lomb Incorporated: *See—*
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Boswell, George Albert; and Scribner, Richard M., to Du Pont de Nemours, E. I., and Company. Polylactide-drug mixtures. 3,773,919, Cl. 424-19.000.

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Bowerfind, Albert L.; Sobel, Leonard H.; and Aviezer, Zvi, to Daggem, Inc. Handle and reel mount construction. 3,772,817, Cl. 43-22.000.

Bowers, George W., Jr.; Broski, Tony W., Jr.; and Pastrone, John, to Memorex Corporation, mesne. Print carrier and transportable cartridge for same. 3,772,988, Cl. 101-111.000.

Bowles, Arnold Gordon, to National Forge Company. Water-cooled reactor core test apparatus. 3,772,918, Cl. 73-432.0sd.

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Boyd, Kenneth D.; and Wayland, Charles L. Vacuum power liquid removal apparatus. 3,773,091, Cl. 141-42.000.

Boyles, Henry Barringer, to Consolidated Foods Corporation. Cleaner for printing equipment. 3,773,676, Cl. 252-171.000.

Boyles, Henry Barringer, to Consolidated Foods Corporation. Press wash. 3,773,677, Cl. 252-172.000.

Bradley, Richard S., to Art's-Way Manufacturing Company, Incorporated. Apparatus for swinging a tubular conveyor section. 3,773,164, Cl. 198-64.000.

Brady, Thomas P.; Langer, Horst G.; and Ayers, Earl D., to Dow Chemical Company, The. Furnace assembly for thermal analysis use. 3,773,963, Cl. 13-31.000.

Brady, Thomas P.; and Langer, Horst G., to Dow Chemical Company, The. Furnace assembly for thermal analysis use. 3,773,964, Cl. 13-31.000.

Bragg, Gary O.; and Jones, Nelson A., to Caterpillar Tractor Company. Noise-isolated rocker arm cover. 3,773,142, Cl. 181-33.00r.

Braid, Milton, to Mobil Oil Corporation. Lubricants containing amine antioxidants. 3,773,665, Cl. 252-50.000.

Brake, Loren Dale, to Du Pont de Nemours, E. I., and Company. Hydrogenation of adiponitrile over alkali-modified cobalt catalyst. 3,773,832, Cl. 260-583.00k.

Brandestini, Antonio. Machine for wrapping tensioned about objects. 3,773,270, Cl. 242-7.210.

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Brennan, Edward J., to Universal Oil Products Company. Compact tray table. 3,773,381, Cl. 297-191.000.

Brennan, Francis P. Hanger bar for shipping garments and the like. 3,773,184, Cl. 211-123.000.

Brennan, John F.; and Lester, George R., to Universal Oil Products Company. Oligomerization of mono-olefins. 3,773,853, Cl. 260-683.15r.

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Bridgforth, Robert M., Jr.; Sutherland, George S.; and Good, Carl D., to Rocket Research Corporation. Rocket propellant composition including human body generated waste materials. 3,773,574, Cl. 149-22.000.

Bridgman, Henry. Uterine aspiration collection bag. 3,773,211, Cl. 220-63.00r.

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Bronstein, Leonard, to Poly Optics, Inc. Method for making contact lens blanks. 3,773,868, Cl. 264-1.000.

Brooks, Dean P.; and Anderson, John Dale, to Hesston Corporation. Continuous stack feeder and method. 3,773,269, Cl. 241-282.100.

Brooks, Houston George, Jr., to American Cyanamid Company. Synthesis of nitroaromatic-azophenols. 3,773,751, Cl. 260-206.000.

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Buchanan, Ben B.; and Cottle, John E., to Phillips Petroleum Company. Recovery of microbial polysaccharides. 3,773,752, Cl. 260-209.00r.

Buchstaller, Anton, to Dornier A.G. Jet delecting device. 3,773,280, Cl. 244-56.000.

Budde, Paul B.: *See—*
Tolkmith, Henry; Seiber, James N.; and Budde, Paul B., 3,773,865.

Budszinat, Willy; Erdmann, Otto; and Zausch, Wolfgang, to Hauni-Werke Koerber & Co. K.G. Method and machine for packaging rod shaped articles. 3,772,848, Cl. 53-24.000.

Buildex Incorporated: *See—*
Antonaccio, Jack A., 3,773,395.

Bullard, E. D., Company: *See—*
Raschke, Herbert A., 3,773,080.

Bullivant, Kenneth W., to R-Tron Corporation. Electronic weight transmitter. 3,773,124, Cl. 177-210.000.

Buning, Robert: *See—*
Vollkommer, Norbert; Klinkenberg, Herbert; Trautvetter, Werner; and Buning, Robert, 3,773,726.

Bunyan, Thomas Walter, to P & O Pilgrim Valve Limited. Fastening of wheels, propellers and the like. 3,772,759, Cl. 29-252.000.

Burba, Christian; Griebsch, Eugen; and Krieger, Bernhard, to Schering AG. Methods of adhering and coating with reactive mixtures of polyesters and polyisocyanates. 3,773,595, Cl. 156-332.000.

Burge, Harry: *See—*
Dennis, John; Burge, Harry; Chilton, Denis Richard Leslie; and Rich, David Arthur, 3,772,853.

Burgess, Fred L. Fish lure retriever. 3,772,815, Cl. 43-17.200.

Burgwin, Stephen Lovell, to Honeywell Inc. Accelerometers. 3,772,920, Cl. 73-517.00b.

Burgyan, Aladar; Pipoly, Richard A.; and Stelzer, Paul H., to Ferro Corporation. Abrasion resistant stabilized lead chromate pigments coated with silica and polyolefin wax. 3,773,535, Cl. 106-298.o00.

Burke, Jerry A., Jr.: *See—*
Davoud, John Gordon; and Burke, Jerry A., Jr., 3,772,883.

Burkhardt, Gottfried; and Metschanabl, Andreas, to DIEHL. Planetary drum printer with movable gear segments to control type carrier rotation. 3,772,989, Cl. 101-110.000.

Burkhardt, Max; Huber, Horst; Zeller, Josef K.; Chateau, Christian; and Schmid, Markus, to Concast AG and Concast Incorporated. Continuous casting machine. 3,773,103, Cl. 164-282.000.

Burnett & Rolfe Limited: *See—*
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Burns, Marvin; Ogden, Charles Thomas; and Rodzen, Richard A., to IIT Research Institute. Steerable catheter. 3,773,034, Cl. 128-2.00m.

Burrage, Lawrence M.; and McStrack, Darrel D., to McGraw-Edison Company. Method for treating wet process ceramic bodies. 3,773,640, Cl. 204-180.00r.

Burroughs Corporation: *See—*
Koziol, Leo B., 3,773,975.

Burroughs, Frank P., to Optical Recognition Systems, Incorporated. Overlapped document detector. 3,773,321, Cl. 271-57.000.

Burrus, Charles; and Boegli, Serge, to Burrus, F. D., & Cie. Apparatus for producing cigarette filters. 3,772,967, Cl. 93-1.00c.

Burrus, F. D., & Cie: *See—*
Burrus, Charles; and Boegli, Serge, 3,772,967.

Burt, Ralph D. Eccentric weight rotary vibrator. 3,772,923, Cl. 74-61.000.

Burton & Noonan: *See—*
Burton, Perry E., 3,773,002.

Burton and Noonan: *See—*
Burton, Perry E., 3,772,948.

Burton, Perry E., to Burton and Noonan. Method and apparatus for forming cloth lengths with folded hems. 3,772,948, Cl. 83-23.000.

Burton, Perry E., to Burton & Noonan. Method and apparatus for folding and sewing. 3,773,002, Cl. 112-121.120.

Burton, Peter Edward: *See—*
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Buss A.G.: *See—*
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Butcher, Louis M., to Aluminum Company of America. Method of forming a laminate structure. 3,773,585, Cl. 156-192.000.

Butler, Anna S.: *See—*
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Butler, Neal L.; and Butler, Anna S. Trailer coupling device. 3,773,358, Cl. 280-513.000.

Butler, Walter J.: *See—*
Puckette, Charles McD.; and Butler, Walter J., 3,774,167.

Buzano, Michel, to Rhone-Poulenc-Textile, S.A., mesne. Process for producing textured yarn. 3,772,747, Cl. 28-72.017.

Buzlea, Ruby D.: *See—*

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Byrd, Richard W., to Zurn Industries, Inc. Dishwasher. 3,773,060, Cl. 134-179.000.

Cabero, Eligio Franco. Water-inlet control valve. 3,773,070, Cl. 137-430.000.

Cadou, Peter B.: *See—*
Story, Thomas A.; and Cadou, Peter B., 3,773,393.

Calabria, Joseph: *See—*
Catanzarite, Vincent O., 3,773,351.

Calame, Jean Pierre: *See—*
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Calcagno, Benedetto; Ferlazzo, Natale; and Ghirga, Marcello, to Societa Italiana Resine S.I.R.S.p.A. Method of preparing supported oxidation catalysts for producing ethylene oxide. 3,773,693, Cl. 252-466.00a.

Calderwood, Andrew S.; and Black, Richard G., to Westinghouse Electric Corporation. Sealing membranes in a reverse osmosis module. 3,773,181, Cl. 210-321.000.

Caldwell, William C., Jr., to Westinghouse Electric Corporation. Noise suppressing throttling valve. 3,773,085, Cl. 137-630.150.

Caldwell, William W.: *See—*
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Calvet, Albert M. Range, trailing distance and safe passing indicator for motor vehicle operators. 3,772,795, Cl. 33-264.000.

Cam-Stat Incorporated: *See—*
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Cambridge Biomedical Corporation: *See—*
Rosenberg, Arthur J., 3,773,046.

Cambridge Thermionic Corporation: *See—*
Cox, Irvin W., 3,774,059.

Cameron, Donald L. Apparatus for water jet propulsion. 3,772,886, Cl. 60-221.000.

Campanini, Sergio: *See—*
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Can Machinery & Engineering Company, Inc.: *See—*
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Canadian General Electric Company, Limited: *See—*
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Canadian Marconi Company: *See—*
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Canadian National Railway Company: *See—*
Scott, William Michael, 3,774,111.

Canamero, Ernest V.; and Ullman, Christoph, to American Can Company. Packaging apparatus. 3,773,235, Cl. 226-112.000.

Canova, Fred; Krouse, Leroy M.; and Hornschuch, Hanns, to Ingersoll-Rand Company. Gas compressor. 3,773,430, Cl. 415-104.000.

Cantatore, Giuseppe: *See—*
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Captain, Khushroo M.; Edwards, John H.; and Russell, David B., to American Velcro, Inc., mesne. Heating apparatus. 3,773,597, Cl. 156-499.000.

Carabet, George F.; Holland, Andrew M.; Morris, Joseph P.; and Pester, William B., to Mattel, Inc. Record for an audio-visual device. 3,773,415, Cl. 353-120.000.

Carbone Corporation, The: *See—*
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Carbonneau, Rene R., to Mylec, Inc. Protective pad for the leg and ankle. 3,772,704, Cl. 2-22.000.

Carborundum Company, The: *See—*
Nowak, Bernard E.; Economy, James; and Cottis, Steve G., 3,773,858.

Cardwell, Paul H.: *See—*
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Carlon Meter Company, Inc.: *See—*
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Carlson John A.; Hoff, Dale R.; and Rooney, Clarence S., to Merck & Co., Inc. 1-Substituted-5-nitroimidazol-2-ylalkyl-(N-substituted)-carbamates. 3,773,781, Cl. 260-309.000.

Carlson, John W.; Esche, Morris; and Ferguson, Steven E., to General Motors Corporation. Engine starter. 3,772,921, Cl. 74-7.00a.

Carlson, Lee Gerald; and Ronsen, Gustav A., to Babson Bros. Co. System for processing wastes. 3,773,659, Cl. 210-7.000.

Carlson, Robert G., to North American Rockwell Corporation. Clamping arrangement for reducing the effects of noise in field effect transistor logic circuits. 3,774,053, Cl. 307-237.000.

Carlson, Robert L., to Miner Enterprises, Inc. Cushioning assembly. 3,773,187, Cl. 213-43.000.

Carlsson, Carl Ingvar, to Aktiebolaget Bofors. Device for the reciprocal securing of two elongated members telescopically arranged in relation to each other. 3,773,371, Cl. 292-262.000.

Carnall, Edward, Jr.: *See—*
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Carothers, John W., to Westinghouse Electric Corporation. Latch and guide assembly for a dropout electrical fuse. 3,774,137, Cl. 337-174.000.

Carrana, Lois. Movie viewer. 3,773,410, Cl. 352-129.000.

Carry, Robert: *See—*
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Carter, Donald, to Lever Brothers Company. Folding apparatus. 3,772,969, Cl. 93-84.00r.

Carter, Warren L., to Perfect Equipment Corporation. Coil spring spacer. 3,773,309, Cl. 267-615.000.

Carter-Wallace, Inc.: *See—*
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Casadevall, James L.; Arnold, James P.; and Buzlea, Ruby D., to Martin Marietta Corporation. Method of making hot gas manifold. 3,773,593, Cl. 156-294.000.

Catanzarite, Vincent O., 23.5% to Timmerman, Hubert G., 5% to Giattino, Louis, 23.5% to Calabria, Joseph, 19.5% to Lynch, Robert and 5% to Gallo, Michele. Gas generator. 3,773,351, Cl. 280-150.0ab.

Caterpillar Tractor Company: *See—*
Anderson, Rodney H., 3,773,129.
Asal, Jerrold R., 3,773,115.
Bowen, Harry H.; Clancy, Lawrence F.; and Jorgensen, Stanley A., 3,773,128.
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Erickson, Rodney R.; and Matthews, Ralph W., 3,772,964.
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Cecil, Howard F.; and Armentrout, James L., to Southwest Forest Industries, Inc. Controlled adhesion sterile package seal. 3,773,248, Cl. 229-51.0wb.

Ceilcote Company, Inc., The: *See—*
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Cella, Robert J. Twist around antenna. 3,774,219, Cl. 343-702.000.

Centre de Recherches Metallurgiques: *See—*
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Centrum voor Research in de Metallurgie: *See—*
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Ceskoslovenska akademie Ved: *See—*
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Chakrabarty, Ranjit Kumar: *See—*
Lyengar, Madhur Srinivas; Haque, Rezaul; Chakrabarty, Ranjit Kumar; and Singh, Abhay Kumar, 3,773,904.

Chambers, Albert; Johnson, Peter Bennett; and Lee, Thomas Brian, to Fisons Limited. Bis-chromones. 3,773,794, Cl. 260-345.200.

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Chambers, Derek, to Raytheon Company. Visual display system. 3,774,161, Cl. 340-172.500.

Champion, Walter P.: *See—*
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Chance, Glenn G.; Crews, Sam T.; and Wilson, Clenis E., to Smith International, Inc. Intermediate drill stem. 3,773,359, Cl. 285-286.000.

Chandler, Robert F., Jr., to General Electric Company. Solid state circuits for and method of simulating relay logic. 3,774,051, Cl. 307-203.000.

Chang, Tom C., to Cam-Stat Incorporated. Time interlock for air conditioning compressor and the like. 3,774,082, Cl. 317-141.00s.

Charbonnier, Jean-Claude; and Tannenberger, Helmut, to Battelle Memorial Institute. Electric accumulator with beta alumina separator and electrolyte consisting of a salt in an organic solvent. 3,773,558, Cl. 136-6.01n.

Charlton, Gregory G., to International Telephone and Telegraph Corporation. Wide-angle planar-beam, antenna adapted for conventional or doppler scan using curved arrays. 3,774,222, Cl. 343-771.000.

Chasek, Norman E., to International Microwave Corporation. Apparatus and systems for testing and monitoring receiver equipment, including system capability for continuous in-service performance monitoring. 3,774,113, Cl. 325-363.000.

Chasin, Mark: *See—*
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Chattem Chemicals; division of Chattem Drug & Chemical Company: *See—*
Beekman, Stewart M., 3,773,918.

Chavet, Itzhak, to State of Israel, Atomic Energy Commission, The. Ion-optical system for mass separation. 3,774,026, Cl. 250-298.000.

Chelin, Charles R.: *See—*
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Chemical Dr. A. Zieren GmbH & Co. KG.: *See—*
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Chiasson, Wilbert A.; Barhorst, Ralph E.; and Muter, Bryce A., to Hobart Brothers Company. Welding apparatus. 3,774,007, Cl. 219-131.00r.
Chiavez, Paolo. Concerning the well heads suitable to support submersed pumps for water extraction. 3,773,108, Cl. 166-85.000.
Chicago Rawhide Manufacturing Company: *See—*
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Chisso Corporation: *See—*
Haruta, Hiroshi; Muraki, Masaaki; Ishibashi, Tadao; and Mushiaki, Fumihiko, 3,773,609.
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, to Hoffmann-La Roche Inc. Propargyl ethers. 3,773,797, Cl. 260-348.00r.
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Chromy, Franz, to Polar (Curacao) N.V., mesne. Rock drilling tool. 3,773,122, Cl. 175-385.000.
Chrysler Corporation: *See—*
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Codman, F. L. & J. C., Company: *See—*
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Cole, Harold F., to Dexter Corporation, The. Thermosetting resins color stabilized with dialkyl thiodipropionates. 3,773,723, Cl. 260-45.85s.
Coleman, Fred J., Jr.; and Weischedel, Richard C., to General Electric Company. Direction finder. 3,774,216, Cl. 343-119.000.
Coleman, Michael C. Antitheft device and ignition control for automobiles and other applications. 3,774,049, Cl. 307-10.0at.
Colgate-Palmolive Company: *See—*
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Collins, John D., to Raytheon Company. Time compression signal processor. 3,774,201, Cl. 343-5.0dp.
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Colora Messtechnik GmbH: *See—*
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Condon, Harry F., to Vaco Products Company. Terminal connector and insulating sleeve therefor. 3,774,141, Cl. 339-223.00r.
Condon, Joseph Henry; and Kaminski, William, to Bell Telephone Laboratories, Incorporated. Band rejection filter using tandem commutating capacitor units. 3,774,125, Cl. 333-70.00a.
Conrad, Rene; and Hohmann, John, to Dynaloc Corporation. Self centering pulley system for thin film material. 3,772,931, Cl. 74-240.000.
Conrad, Winthrop B., to Teleflex, Incorporated. Method for manufacturing a gear wheel. 3,772,936, Cl. 74-434.000.
Conroy, Gary D., to Anchor Hocking Corporation. Apparatus for measuring the thickness of a metal oxide coating on a glass article. 3,773,420, Cl. 356-51.000.
Consoli, Terenzio; and Nagau, Shigeo, to Commissariat a l'Energie Atomique. Chamber for the high-frequency heating of a conducting medium. 3,774,001, Cl. 219-10.650.
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Cook, Charles E., to Sperry Rand Corporation. Correlation system with recirculating reference signal for increasing total correlation delay. 3,774,019, Cl. 235-181.000.
Coontz, John G. Bulldozer means with a pivotable blade. 3,773,116, Cl. 172-804.000.
Copeland, John Alexander, III, to Bell Telephone Laboratories, Incorporated. Conductor-pattern apparatus for controllably inverting the sequence of a serial pattern of single-wall magnetic domains. 3,774,182, Cl. 340-174.0va.
Copp, Donald G., to Indian Head, Inc., mesne. Electrical junction and switch boxes. 3,773,968, Cl. 174-53.000.

Coppa, Paul L.; Marchesani, John J.; and Orsatti, Louis G., to Mohawk Data Sciences Corporation. Reel control for a tape transport system. 3,773,275, Cl. 243-184.000.

Coppock, Richard A.: *See—*
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Corsentino, Joseph; deceased (by Corsentino, Donald J.; executor), to Susquehanna Corporation, The. Apparatus for producing fiber mats of mineral fibers. 3,773,485, Cl. 65-9.000.

Coscia, Anthony Thomas: *See—*
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Costantinous, Charles A. Rotary engine. 3,773,022, Cl. 123-8.430.

Costanza, Carl C.; Weber, Walter W.; Betlejewski, Frank W.; and Frystak, Richard, to Bell & Howell Company. Slide transport device. 3,773,413, Cl. 353-112.000.

Cote, Lucien. Snow plow. 3,772,803, Cl. 37-42.0vl.

Cottis, Steve G.: *See—*
Nowak, Bernard E.; Economy, James; and Cottis, Steve G., 3,773,858.

Cottle, John E.: *See—*
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Cotton, Joseph Bernard; Hayfeeld, Peter Charles Steel; and Scholes, Ian Robert, to Imperial Metal Industries (Kynoch) Limited. Method of making an electrode. 3,773,555, Cl. 117-217.000.

Coulter, John G.: *See—*
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Council of Scientific & Industrial Research: *See—*
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Coursault, Roger M.; and Fourrey, Francois, to Regie Nationale des Usines Renault and Automobiles Peugeot. Seats, particularly for motor vehicles. 3,773,382, Cl. 297-284.000.

Coutellier, Paul Lucien. Sanitary appliance. 3,772,710, Cl. 4-7.000.

Cowell, Robert L.: *See—*
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Cox, Elmer Adrain; Tiner, Wayne Douglas; and Woods, Ritchey Paul, Jr., to Zachry, H. B., Co. Housing. 3,772,835, Cl. 52-79.000.

Cox, Irvin W., to Cambridge Thermionic Corporation. Rotary stepping motor with laminated stator and rotor pole construction. 3,774,059, Cl. 310-49.000.

Cox, Karmen D.: *See—*
Sample, Steven B.; Scheuer, Paul R.; Speheger, Stevan W.; and Cox, Karmen D., 3,774,056.

Cozza, Giorgio; Piccolo, Luigi; and Bottai, Gabriele, to Societa Italiana Resine S.p.A. Process for producing sodium sulphate. 3,773,911, Cl. 423-551.000.

Cramer, Walter Adam: *See—*
Houtman, Johannes Paulus Willem; Cramer, Walter Adam; and Piet, Gerrit Johan, 3,772,847.

Crandall, Robert E.; and Eggert, Glenn J., to Rex Chainbelt Inc. Air conveyor. 3,773,391, Cl. 302-31.000.

Crawford Fitting Company: *See—*
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Crews, Sam T.: *See—*
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Croft, Brian Hugh, to Brico Engineering Limited. Fluid pressure regulating valves. 3,773,072, Cl. 137-494.000.

Cronan, Philip J. Pressure actuated trigger assembly for mixing dual liquids. 3,773,264, Cl. 239-304.000.

Cronin, Timothy Henry; Hammen, Philip Dietrich; Abushanab, Elie; and Abu El-Haj, Marwan Jawdat, to Pfizer Inc. Use of 2,3-dihydro-1-oxo-1H-pyrrolo(3,4-b) quinoxaline-4,9-dioxides as animal growth promotants. 3,773,950, Cl. 424-250.000.

Cronkhite, Leonard W.: *See—*
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Crook, W. Mack: *See—*
Becker, Anthony F.; Crook, W. Mack; Sherer, Charles R.; Lilly, Mason M.; and Kinzbach, Robert B., 3,772,944.

Crosby, Lawton H., to Morley Furniture Company. Spring construction. 3,773,310, Cl. 267-110.000.

Cross, Edward A.; Frye, Richard L.; Daniel, Robert T.; and Bright, Gordon S., to Texaco Inc. Greases thickened with fibrous asbestos which fibers are coated with aliphatic esters of N-acyl (aliphatic)aminobenzoic acid. 3,773,663, Cl. 252-13.000.

Crossman, Phillip L.; Kenrick, Robert C.; and Le Mieux, Robert W., to Brunswick Corporation, The. Air cushion table game. 3,773,325, Cl. 273-126.00a.

Cruickshank, Philip Alexander, to FMC Corporation. Herbicidal di hydrobenzofuranylurea. 3,773,491, Cl. 71-88.000.

Cruickshank, Roy W.; and Knight, Jack O. Aquarium diver. 3,773,015, Cl. 119-5.000.

Cruse, Adrian Robert, to Walker, Thomas, Limited. Machine for attaching pronged garment fasteners. 3,773,237, Cl. 227-18.000.

Cucinella, Salvatore; and Mazzei, Alessandro, to Snam Progetti S.p.A. Ethylene and -olefins copolymers and process for obtaining same. 3,773,734, Cl. 260-88.20r.

Cuclis, John J.: *See—*
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Cuevas, Ephraim A.; and Johnston, Wayne S., to PPG Industries Inc. Removal of dissolved lead from lithium chloride solutions. 3,773,908, Cl. 423-499.000.

Cummins, Earl W., to Du Pont de Nemours, E. I., and Company. Preparation of an aqueous slurry of ammonium chloride and methylmercapto-hydroxybutyric acid. 3,773,927, Cl. 424-166.000.

Curry, John J., to Phoenix Closures, Inc. Container and closure combination. 3,773,208, Cl. 220-43.00r.

Cusic, John W.; Ellefson, Charles R.; and Levon, Ernest F., to Searle, G. D., & Co. 1-Arylideneamino-4-(2-oxo-3-phenyl-3-benzofuryl)piperazines. 3,773,759, Cl. 260-240.00g.

Cutler-Hammer, Inc.: *See—*
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Dahlgren, Jan-Ake, to Sonab Development AB. Decoding device for tone sequence codes. 3,774,114, Cl. 325-492.000.

Dahlstrom, Robert Victor; and Jaehnig, James Herbert, to Du Pont de Nemours, E. I., and Company. Process for the biological production of alpha, omega-alkanedioic acid. 3,773,621, Cl. 195-28.00r.

Dai Nippon Toryo Co., Ltd.: *See—*
Wakimoto, Saburo; Tugukuni, Hideyoshi; Kano, Masafumi; Matsui, Yutaka; Kazama, Seiju; and Goto, Jugo (said Wakimoto, Tugukuni and said Kano, assors. to said), 3,773,729.

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Daiwa Seiko Co., Ltd.: *See—*
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Daly, Norman Richard, to United Kingdom Atomic Energy Authority. Ion beam intensity measuring apparatus. 3,774,028, Cl. 250-294.000.

Damico, Ralph A., to Procter & Gamble Company, The. Process for preparing pyridine N-oxide carbanion salts and derivatives thereof. 3,773,770, Cl. 260-290.00r.

Dangeleit, Siegfried: *See—*
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Davies, Norman, to Westinghouse Electric Corporation. Motor advanced spring charging pawl and retchet mechanism with spring assist. 3,773,995, Cl. 200-153.0sc.

Davis, Ernest D.: *See—*
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Davis, Leo W., to Peerless Mfg. Co. Vehicle suspension assembly. 3,773,348, Cl. 280-124.00a.

Davis, Raymond; and Rowlund, Poul B. Cable retracton. 3,773,987, Cl. 191-12.400.

Davis, William P., to Bio-Logics Products, Inc., mesne. Fluid valve. 3,773,082, Cl. 137-625.480.

Davoud, John Gordon; and Burke, Jerry A., Jr., to D-Cycle Associates. Multi-cylinder external combustion power producing system. 3,772,883, Cl. 60-94.000.

Day, Donald L.; Halstead, Charles H.; and Huck, Neil F., to Textron, Inc. Crimping machine for standing seam roofs. 3,773,005, Cl. 113-55.000.

Day, Edgar Allen: *See—*
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Day, Robert W. Sub-caliber conversion unit. 3,772,812, Cl. 42-7.000.

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de Beaulie, Henry: *See—*
Kalopissis, Gregoire; Abegg, Jean Louis; de Beaulie, Henry; and Ghilardi, Guiliana, 3,773,056.

De Carli, Earl Victor: *See—*
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De Koning, Jan, to N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal". Method and suction dredging installation for conveying dredging spoil. 3,772,805, Cl. 37-58.000.

De Voss, Edwin A., to Northrop Corporation. Backup wedge device for a fastener installing machine. 3,773,238, Cl. 227-61.000.

De Weoskin, Irvin S., to Orthoband Company, Inc. Orthodontic tensioning assembly. 3,772,789, Cl. 32-14.00d.

Dean, Sheldon W., Jr.: *See—*

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Decision Data Computer Corporation: *See—*
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Decrosta, Edward F. Method of dissolution of metals using thermogalvanic cells. 3,773,637, Cl. 204-146.000.

Deepsea Ventures, Inc.: *See—*
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Deering Milliken Research Corporation: *See—*
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Degueldre, Louis; Clerbois, Lucien; and Bourgeois, Louis, to Solvay et Cie. Compound of rhodium and molybdenum and method of manufacture. 3,773,915, Cl. 423-393.000.

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Del Prete, Cosimo; and Siegal, Burton L. (said Siegal assor. to said), 3,773,143.

Del Prete, Cosimo; and Siegal, Burton L., said Siegal assor. to said Del Prete, Cosimo. Roller attachment for ladders. 3,773,143, Cl. 182-214.000.

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Denis, Jacques; and Parc, Guy, to Institut Francais du Petrole des Carburants et Lubrifiants. Lubricating compositions. 3,773,668, Cl. 252-56.00r.

Denisov, Vsevolod Nikolaevich: *See—*
Ruppeneit, Konstantin Vladimirovich; Prigozhin, Evgeny Semenovich; Denisov, Vsevolod Nikolaevich; and Golubev, Alexandr Vasilievich, 3,772,911.

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Dennis, John; Burge, Harry; Chilton, Denis Richard Leslie; and Rich, David Arthur, to Westinghouse Brake and Signal Company Limited. Automatic voltage control apparatus for electrostatic precipitators. 3,772,853, Cl. 55-105.000.

Denzel, Theodor: *See—*
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Desai, Ramesh R.; and Dohn, George D., to Balsa Ecuador Lumber Corporation. Structural light-weight panel of high strength, having thermal insulation properties and enclosures formed thereby. 3,773,604, Cl. 161-37.000.

Design and Manufacturing Corporation: *See—*
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Deville, Henri: *See—*
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Devore, Ernest W.; and Hall, Phil H., to International Business Machines Corporation. Error control circuits and methods. 3,774,154, Cl. 340-146.10f.

Dexter Corporation, The: *See—*
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Dexter, Martin, to Ciba-Geigy Corporation. N-aroyl-N'-(alkylhydroxyphenyl)alkanoyhydrazines. 3,773,830, Cl. 260-559.00h.

Diagnostic Data, Inc.: *See—*
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Didde-Glaser, Inc.: *See—*
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Diedrich, Bernd; and Keil, Karl Diether, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of polyolefins. 3,773,735, Cl. 260-88.20r.

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Dietzsch, Hans-Joachim; and Dietzsch, Otto. Method for manufacturing load bearing structures, such as structural slabs or the like, and apparatus for carrying out the method. 3,773,584, Cl. 156-191.000.

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Dille, Kenneth L.; Saines, George S.; and Arkell, Alfred, to Texaco Development Corporation, mesne. Jet fuel manufacture. 3,773,652, Cl. 208-49.000.

Dillenschneider, Jean-Paul, to Compagnie Generale des Etablissements Michelin, raison sociale Michelin & Cie. Polymerization process using an ester ramifying agent and polymers therefrom. 3,773,732, Cl. 260-85.100.

Ditto, Edwin D., to General Motors Corporation. Friction welding method. 3,772,765, Cl. 29-470.300.

Dixon, George S., Jr.; Gilbert, Edward O.; and Robaszkiewicz, Gerald D., to Reliance Electric Company. Elevator electronic position device. 3,773,146, Cl. 187-29.00r.

D'Luhy, Emil A. Golf ball retrieving device. 3,773,374, Cl. 294-19.00a.

DND Corporation: *See—*
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Dodwell, Geoffrey Michael, to Ilford Limited. Production of photographic silver halide emulsions. 3,773,517, Cl. 96-114.000.

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Dooley, John W., to Kuhlenschmidt-Dooley Corporation. Holographic depth correction. 3,774,203, Cl. 343-5.00r.

Dorn, Clifford G.; and Padilla, John R., to United States of America, Navy. Narrow band frequency modulated jammer. 3,774,208, Cl. 343-18.00e.

Dorn, Peter; and Dille, Kenneth L., to Texaco Inc. Motor fuel containing a substituted asparagine. 3,773,479, Cl. 44-71.000.

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Dunn, Byron G. Fire extinguishing apparatus. 3,773,111, Cl. 169-26.000.
Dunn, Harold F., Jr., to International Business Machines Corporation. Method for indicating stage of cure of crosslinked resins and compositions resulting therefrom. 3,773,706, Cl. 260-37.0ep.
Dunn, William M.; and Sarnes, Myron C. Composite heavy-duty sintered powdered machine element. 3,772,935, Cl. 74-434.000.
Dunwoodie, Duane E., to Wiltron Company. Means for shunting select signals across an unknown impedance and blocking said signals from a measuring system. 3,774,107, Cl. 324-57.00r.
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Dutra, Joseph G., Jr. Adjustable load stabilizer frame for forklift truck and method. 3,773,202, Cl. 214-654.000.
Dutro, Orville V.; and Hewson, Sherman H., 1/3 to Taylor, Mildred L. Batch stacker. 3,772,971, Cl. 93-93.00c.
Dutro, Orville V.; and Hewson, Sherman H., 1/3 to Taylor, Mildred L. Stacker. 3,772,972, Cl. 93-93.00c.
Dykstra, Dan. Twine cutting device for baler. 3,773,361, Cl. 280-14.000.
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Easley, Sydney E., to General Motors Corporation. Shaft support assembly including a fluid deflecting bearing spacer. 3,773,396, Cl. 308-187.000.
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Ebendt, Volker, to Deutsche Steinzeug- und Kunstsoffwarenfabrik. Process for the production of ceramic-metal compound joints. 3,772,766, Cl. 29-473.100.
Eberline, Howard C., to Kerr-McGee Corporation. Electrical cable and borehole logging system. 3,773,109, Cl. 166-54.500.
Ebert, Hans; Kampmann, Friedrich Wilhelm; Thummler, Ursus; and Werner, Hugo, to Knapsack Aktiengesellschaft. Lead-in-device passing a conductor through the cover of an electrical precipitation apparatus. 3,773,966, Cl. 174-31.500.
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Groebke, Wolfgang; and Wirz, Roswitha, to Sandoz Ltd. 2,6-Dihalo-4-nitrophenyl-azo-phenyl compounds having an optionally substituted phenylcarbamoyloxyalkyl substituent. 3,773,750, Cl. 260-207.100.

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Gronier, Jean. Propulsion fin for a floating body. 3,773,011, Cl. 115-28.00r.

Grosskopf, Herbert, to Rohde & Schwarz. Method and apparatus for measurement of spurious voltages in video signals. 3,773,974, Cl. 178-6.000.

Groves, William L., Jr., to Continental Oil Company. Method of removing liquids and small solids from well bores. 3,773,110, Cl. 166-309.000.

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Hann, Donald R. Motor heater unit. 3,774,096, Cl. 318-436.000.

Hansen, Harry, to Opti-Holding AG. Slide-fastener stringer. 3,772,743, Cl. 24-205.10r.

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Heermann, Richard, to Andreas Stihl Maschinenfabrik. Holding arrangement for motor saws. 3,772,784, Cl. 30-382.000.

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Heibel, Helmut, to Girling Limited. Disc brakes for vehicles. 3,773,150, Cl. 188-73.500.

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Helton, Charles J., to North American Rockwell Corporation. Material removing device. 3,773,261, Cl. 239-133.000.

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Henson, Ralph B.; and Johnson, William G., to Caterpillar Tractor Company. Lightweight crankshaft. 3,772,763, Cl. 29-470.300.

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Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kroneberg, Hans-Gunther, to Bayer Aktiengesellschaft. N-alkanoyl-N-[1-(heterocyclic amino) isopropyl]-2-aminopyridines. 3,773,771, Cl. 260-293.690.

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Ishida, Kinyu, to Teijin, Limited. Method of and apparatus for arranging creels of drawing machines. 3,773,191, Cl. 214-16.10r.

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Jackson, Richard H.; and Schulz, George H., to Gits Bros. Mfg. Co. Water air separator. 3,772,857, Cl. 55-418.000.

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Jamison, Joel D., to Hercules Incorporated. O,O-dialkyl-S-[2-halo-1-(N-succinimido)ethyl] phosphorothioates and phosphorodithioates used as insecticides. 3,773,933, Cl. 424-200.000.

Janssen, Paul Adriaan Jan, to Janssen Pharmaceutica, N.V. N-aralkyl-N'-aralkyl piperazine pharmaceutical composition. 3,773,939, Cl. 424-250.000.

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Jarolim, Vaclav; Slama, Karel; and Sorm, Frantisek, to Ceskoslovenska akademie Ved. Esthers of 5-oxaalkenoic acids. 3,773,823, Cl. 260-484.00r.

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Jensen, Herman George, to Seeburg Corporation of Delaware, The. Self-locking cash box. 3,773,252, Cl. 232-1.00r.

Jerila, Torsti T. T., to Acme General Corporation. Privacy lock. 3,773,370, Cl. 292-169.210.

Jezek, Henry J. Plant stripping apparatus. 3,772,863, Cl. 56-34.000.

Johannes, John H. Animal crate for pick-up trucks. 3,773,017, Cl. 119-17.000.

Johansen, Bent Georg, to Bristol-Myers Company. Hair curler with plastic integral ring. 3,773,057, Cl. 132-33.00r.

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Johnson, Bertrand Harold, to Bell Telephone Laboratories, Incorporated. Light emitting device. 3,774,021, Cl. 240-2.100.

Johnson, Carl W. Scour pad and method of making the scour pad. 3,772,728, Cl. 15-209.00r.

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Jones, Josh B. Case for fluid filter cartridge. 3,773,182, Cl. 210-321.000.

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Kaiser, Carl, to Smithkline Corporation. Hydroxyphenyl-2-decahydroquinolylcarbinols in producing β-adrenergic stimulant activity. 3,773,954, Cl. 424-258.000.

Kaiser, Edward William; and Rentmeester, Kenneth Richard, to American Can Company. Can body. 3,773,589, Cl. 156-218.000.

Kaiser, Wolfgang; and Schwarzer, Franz, to Kalle Aktiengesellschaft. Process for preparing a dry semi-permeable cellulose acetate membrane. 3,773,534, Cl. 106-178.000.

Kakabadze, Aleko Konstantinovich: *See—*
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Kalopissis, Gregoire; Abegg, Jean Louis; de Beaulie, Henry; and Ghilardi, Guiliana, to Societe Anonyme dite: L'Oreal. Compositions and methods of improving the quality of human hair with stagle methylol compounds. 3,773,056, Cl. 132-7.000.

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Kanazawa, Shogo; Saito, Shoji; Nakashima, Akira; Yamato, Kazunari; Okamoto, Kentaro; Kanaya, Ken; and Tanabe, Kouzi, to Nippon Steel Corporation. High tensile steel for large heat-input automatic welding and production process therefor. 3,773,500, Cl. 75-13.00b.

Kane, William S.; and Cardwell, Paul H., to Deepsea Ventures, Inc. Processing of manganese nodules from the ocean floor for metal values. 3,773,635, Cl. 204-105.00m.

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Karls, Robert F.; and Enright, James H., to Emerson Electric Co. Compactor. 3,772,984, Cl. 100-215.000.

Karlsson, Tord Herlog Ingemar, to Aktiebolaget Svenska Flaktfabriken. Air humidifying unit. 3,773,307, Cl. 261-97.000.

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Kasahara, Riichiro, to Shin Cosmos Denki Kabushiki Kaisha. Gas lighter testing device. 3,772,908, Cl. 73-27.00r.

Kashima, Yoshitake, to Hitachi, Ltd. Stationary induction apparatus. 3,774,135, Cl. 336-84.000.

Kataoka, Nobuyuki: *See—*
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Katayama, Hiroshi. Flexible extensible and contractable tube. 3,773,087, Cl. 138-120.000.

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Kato, Saburo, to Kabushiki Kaisha Ricoh. Spiral track type magnetic recording and reproducing device. 3,773,335, Cl. 274-4.00j.

Kato, Takashi, to Musashino Mechanical Engineering Company Limited and Mitsubishi Petrochemical Company Limited. Method and device for manufacturing bag. 3,773,596, Cl. 156-443.000.

Kato, Tomotake: *See—*
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Katz, Ira; Evers, William J.; and Sanderson, Anne, to International Flavors & Fragrances Inc. Flavoring compositions and processes utilizing alpha-ketothiols. 3,773,524, Cl. 426-65.000.

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Kawagoshi, Tameo; and Aoshima, Kiyoji, to Kabushiki Kaisha Komatsu Seisakusho. Mechanical double action press using a link mechanism. 3,772,986, Cl. 100-282.000.

Kawakami, Hajime; and Yamamoto, Fumihiko, to Nippon Keori Co., Ltd. Spinning machines having spindle rails movable for tube exchange. 3,772,867, Cl. 57-52.000.

Kawamata, Kiyoshige: *See—*
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Kazan, Benjamin, to International Business Machines Corporation. Interactive-display storage cathode ray tube. 3,774,066, Cl. 315-10.000.

Ke, Yang-Hsien: *See—*
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Kearns, Robert W. Intermittent windshield wiper system with electrodynamic braking. 3,774,091, Cl. 318-dig.200.

Keeler, Frederick D.; Ellis, Carleton, Jr.; and Miller, John C., to KLM Company, The. Thermoformed closures which are sealed to containers by the use of sonic energy and the method of sealing the same. 3,773,205, Cl. 215-42.000.

Keeney, Bill R.; and Johnson, Joe W., Jr., to Halliburton Company. Inhibited treating acid. 3,773,465, Cl. 21-2.70r.

Keep, Henry, Jr. Heat treating appliance for stress-relieving steel piping and like structures. 3,774,013, Cl. 219-535.000.

Keil, Karl Diether: *See—*
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Kelsey, Paul S., to Susquehanna Corporation, The. Slicing a column into slabs and reuniting the slabs in a tapered portion of the extrusion die. 3,773,880, Cl. 264-56.000.

Kelsey-Hayes Company: *See—*
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Kenco Engineering, Incorporated: *See—*
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Kennedy, James A., to Honeywell Information Systems, Inc. Universal data-communications interface. 3,773,973, Cl. 178-58.00r.

Kennedy, James D.: *See—*
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Kenrick, Robert C.: *See—*
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Kent, Peter Michael, to Brico Engineering Limited. Electromagnetic fuel injectors. 3,773,265, Cl. 239-585.000.

Kent, Walter B. Front operated fireplace damper control. 3,773,029, Cl. 126-288.000.

Kernen, Hans. Moulding apparatus. 3,773,445, Cl. 425-4.000.

Kernitsky, Leopold Pavlovich: *See—*
Rabichev, Lev Yakovlevich; Vasiliev, Vladislav Fedorovich; Putilin, Alexandr Sergeevich; Ilina, Tatyana Grigorievna; Raku, Petr Vasilievich; and Kernitsky, Leopold Pavlovich, 3,773,049.

Kerr, Richard H.: *See—*
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Kerr-McGee Corporation: *See—*
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Kessler, Jans-Joachim: *See—*
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Ketelaar, Peter, to U.S. Philips Corporation. Circuit arrangement for correcting a line deflection current flowing in a picture display apparatus. 3,774,067, Cl. 315-27.0td.

Keystone International, Inc.: *See—*
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Khambaty, Abdullah A.: *See—*
Ioannilli, Joseph R.; Karcher, Ralph E., Jr.; and Khambaty, Abdullah A., 3,773,004.

Khattab, Ghazi, to Allied Chemical Corporation. Stabilized melt-processable ethylene/chlorotrifluoroethylene copolymer compositions. 3,773,698, Cl. 260-23.0xp.

Kiefer, Hans: *See—*
Zschocke, Albrecht; Kummer, Horst; Mayrhofer, Eike; Kimmig, Josef; and Kiefer, Hans, 3,773,802.

Kieffer, William L.: *See—*
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Kiener, Michael A.; and Richman, Edward B., to Addressograph-Multigraph Corporation. Disposable blanket for printing presses. 3,773,551, Cl. 117-138.50a.

Kijima, Hiromitsu, to Tokyo Kogaku Kikai K.K. Suspension type levelling device. 3,772,798, Cl. 33-348.000.

Killmer, Roberta, to Meridian Decorator Accessories and Imports, Inc. Simulative keystone. 3,773,602, Cl. 161-19.000.

Killmeyer, William S. Anti-theft arrangement for automobiles. 3,773,138, Cl. 180-114.000.

Kimel, Eugene. Openable ring for curtains. 3,772,734, Cl. 16-87.200.

Kimmel, Heinz, to Siemens Aktiengesellschaft. Method for producing a visible record of gas flow patterns. 3,774,225, Cl. 346-1.000.

Kimmig, Josef: *See—*
Zschocke, Albrecht; Kummer, Horst; Mayrhofer, Eike; Kimmig, Josef; and Kiefer, Hans, 3,773,802.

Kimura, Kazuo; and Nakanishi, Toru, to Kyowa Hakko Kogyo Co., Ltd. Process for producing citric acid isocitric acid and microbial cells by fermentation. 3,773,620, Cl. 195-28.00r.

King, Gordon Alan: *See—*
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Kinzbach, Robert B.: *See—*
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Kirk, Donald, Jr.; and Pallini, Michael J., to Digital Communications, Inc. Multiplexed video and subcarrier microwave communications system. 3,773,979, Cl. 179-15.0fd.

Kirkliauskas, Alexander J. Devices for mounting medical appliance. 3,773,048, Cl. 128-283.000.

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Kise, Mearl A.; and Ellis, Leonard C., to Virginia Chemicals, Inc. Sodium dithionite solution stabilization. 3,773,679, Cl. 252-188.000.

Kita, Yasuo, to Sumitomo Electric Industries, Ltd. Mechanical servo means. 3,772,963, Cl. 91-369.00b.

Kita, Yasuo, to Shimadzu Seisakusho, Ltd. Axial plunger pump. 3,772,965, Cl. 91-480.000.

Kitada, Toyofumi: *See—*
Kunioka, Kazuo; Tanaka, Junichi; Noguchi, Takao; Ikoma, Tsutomu; Kitada, Toyofumi; and Tanaka, Jinkichi, 3,773,260.

Kitamura, Hoshiaki; and Misono, Shigemi. Pneumatically powered loading unit for use with an industrial robot. 3,773,189, Cl. 214-1.0bb.

Kitterman, Lawrence Pete; and Rice, Howard Gene. Tray washing system. 3,773,058, Cl. 134-62.000.

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Klatt, Alfred: *See—*
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Klinkenberg, Herbert: *See—*
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KLM Company, The: *See—*
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Knippenberg, Wilhelmus Franciscus; and Verspui, Gerrit, to U.S. Philips Corporation, mesne. Method of manufacturing multiple conductive lead-in members. 3,772,774, Cl. 29-624.000.

Knowles, Edwin C.; McCoy, Frederic C.; and Watson, Richard D., to Texaco Inc. Oil dispersible pesticides employing an N-vinyl-2-pyrrolidinone-alkyl methacrylate copolymer dispersant. 3,773,926, Cl. 424-78.000.

Knuppel, Helmut; Brotzmann, Karl; and Fassbinder, Hans Georg, to Eisenwerk-Gesellschaft Maximilianshuttle m.b.H. Process for producing chrome steels and a converter for carrying out the process. 3,773,496, Cl. 75-60.000.

Koch, Franklin O., Jr.; and Lull, Donald E., to Caterpillar Tractor Company. Clutch with coolant cut-off valve. 3,773,157, Cl. 192-113.00b.

Koch, Hans-Juergen, to Fuller Company. Screw rotor machine and rotors therefor. 3,773,444, Cl. 418-201.000.

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Koch, Heinrich; and Staneck, Heinz (said Staneck assor. to said), 3,773,599.

Koch, Heinrich; and Staneck, Heinz, said Staneck assor. to said Koch, Heinrich. Method of processing synthetic plastic materials for subsequent extrusion and regeneration. 3,773,586, Cl. 156-193.000.

Koch, Heinrich; and Staneck, Heinz, said Staneck assor. to said Koch, Heinrich. Device for the preparatory treatment of foil webs or strips of synthetic material. 3,773,599, Cl. 156-515.000.

Koch, Paul J.: *See—*
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Koch, Sigurd, to Siemens Aktiengesellschaft. Fixed data memory utilizing Schottky diodes. 3,774,170, Cl. 340-173.0sp.

Koch, Wilhelm; Walter, Gustav; and Dangeleit, Siegfried, to Demag Aktiengesellschaft. Turret device for continuous casting installations. 3,773,228, Cl. 222-168.000.

Kochs Adler AG: *See—*
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Kocks, Friedrich. Apparatus for casting metals. 3,773,104, Cl. 164-323.000.

Koehler, Joseph E.: *See—*
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Koizumi, Shun; Suzoki, Takeshi; and Okuno, Chuzo, to Daikin Kogyo Co., Ltd. Thermo-stable composition of vinylidene. 3,773,713, Cl. 260-30.200.

Kokusan Kinzoku Kogyo Kabushiki Kaisha: *See—*
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Kolin, Alexander, to University of California, The Regents of the. Simplified external field electromagnetic catheter flow meter. 3,773,037, Cl. 128-2.05f.

Koller, Rudolf, to Siemens Aktiengesellschaft. Devices for shifting type carriers in electric typewriters and the like. 3,773,159, Cl. 197-16.000.

Kombinat VEB Galvanische Elemente: *See—*
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Komiyama, Yoshiro: *See—*
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Kondo, Kunio; Ichikawa, Kiyoshi; and Nakahara, Yasuji, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyurethane with copolymers of dialkyl amino alkyl methacrylates. 3,773,857, Cl. 260-859.00r.

Kondo, Yasuo, to Nippondenso Co., Ltd. Sealing means for a regenerative heat exchanger. 3,773,105, Cl. 165-9.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
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Konoshita, Kunio: *See—*
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Koo, Tuh-Kai; and McCune, Kent R., to National Cash Register Company, The. Memory with self-clocking beam access. 3,774,168, Cl. 340-173.0cr.

Kopp, Valentine T., to Merrill Brothers. Lifting clamps. 3,773,377, Cl. 294-104.000.

Koppe, Herbert: *See—*
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Koppers Company, Inc.: *See—*
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Kosco, William C., to La Salle Machine Tool, Inc. Alternating current static control system. 3,774,235, Cl. 307-218.000.

Koshikawa, Takeo: *See—*
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Kovacs, Albert, to Medicor Murvek. Transistor-type amplifier circuit for the production of output signals having a peak-to-peak amplitude larger than the breakdown voltage of the transistors. 3,774,117, Cl. 330-14.000.

Kowalski, Thomas R., to Honeywell Inc. Slide loader. 3,773,414, Cl. 353-116.000.

Koziol, Leo B., to Burroughs Corporation. Digital transmitter. 3,773,975, Cl. 178-66.00r.

Kozlowski, Theodore R.: *See—*
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Kranz, Paul J.; Little, Victor, Jr.; and Myers, Michael, to American Smelting and Refining Company. Copper base alloy. 3,773,503, Cl. 75-153.000.

Kremer, Thomas. Domino like game pieces. 3,773,327, Cl. 273-137.00c.
Krieger, Bernhard: *See—*
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Krieger, Irving W.; Peluchiwski, John J.; and Willcox, Dale F., to Turnas Electric Company. Snap action pressure responsive control device with single stroke make and break. 3,773,991, Cl. 200-83.00p.
Krimm Enterprises, Inc.: *See—*
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Krimm, John H., to Krimm Enterprises, Inc. Mobile washing unit. 3,772,723, Cl. 15-21.00d.
Kroll, Gunter; Struwe, Herbert; and Fliess, Gunther, to U.S. Philips Corporation. Television aerial measurement receiver. 3,773,972, Cl. 178-7.30r.
Kroneberg, Hans-Gunther: *See—*
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Kruger, Georg: *See—*
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Krygier, Dennis A.: *See—*
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Kubota, Seishi; and Kunugi, Takashi, to Nissan Motor Company. Method and apparatus for regulating fuel flow of a gas turbine engine. 3,772,880, Cl. 60-39.020.
Kuenzel, Rainer. Angularly adjustable handle for hand tools. 3,773,094, Cl. 145-61.00g.
Kuhlenschmidt-Dooley Corporation: *See—*
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Kummerer, Karl-Heinz, to Licentia Patent-Verwaltungs-G.m.b.H. Upright conveying device for flat items. 3,773,317, Cl. 271-34.000.
Kunioka, Kazuo; Tanaka, Junichi; Noguchi, Takao; Ikoma, Tsutomu; Kitada, Toyofumi; and Tanaka, Jinkichi, to Nippon Kokan Kabushiki Kaisha. Method of adjusting the cooling speed of welds. 3,773,260, Cl. 239-10.000.
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Kupperman, Sam; and Kupperman, Dennis I., 3,772,810.
Kupperman, Sam; and Kupperman, Dennis I., 3,772,822.
Kupperman, Sam; and Kupperman, Dennis I. Crumb sweeper and the like. 3,772,726, Cl. 15-48.000.
Kupperman, Sam; and Kupperman, Dennis I. Reflecting figure to be applied to a support surface. 3,772,810, Cl. 40-125.00a.
Kupperman, Sam; and Kupperman, Dennis I. Integral wheel and power elastic strip to power toy vehicle. 3,772,822, Cl. 46-90.000.
Kuratomi, Tatsuo. Method of manufacturing diamond crystals. 3,773,903, Cl. 423-446.000.
Kurimoto, Kozo; Umetsu, Hiroshi; Shoji, Takeo; and Yoshinari, Yukio, to Hitachi, Ltd. Wire-type slide resistor for a self-balancing instrument having contact position regulating means. 3,774,139, Cl. 338-74.000.
Kurobe, Moriji; Ito, Nobuhiro; and Takahashi, Hidero, to Kabushiki Kaisha Toyota Chuo Kenkyusho. Bulk-polymerization method including a cold-forming step. 3,773,869, Cl. 264-22.000.
Kuroki, Tadashi: *See—*
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Kurz, John C., to Advanced Air, Inc. Access door and frame. 3,773,086, Cl. 138-92.000.
Kushima, Teizo, to Minolta Camera Kabushiki Kaisha. Electrophotographic portable camera. 3,773,416, Cl. 355-3.00r.
Kutzer, Hans-Joachim, to Didier-Werke A.G. Container with sliding shutter for a liquid melt. 3,773,226, Cl. 222-148.000.
Kyle, William F., Jr., to Scan Systems Incorporated. Intrusion alarm with signal processing and channel indentification. 3,774,190, Cl. 340-258.00r.
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Labbe, Francis Auguste Maurice; and Mitchell, Michael Bruce, to Molins Limited. Preparing cigarette filters. 3,773,883, Cl. 264-151.000.
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Laing, Ingeborg: *See—*
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Laing, Nikolaus; and Laing, Ingeborg. Device for storing heat or cold. 3,773,031, Cl. 126-400.000.
Laing, Robert B.; and Solowiejko, George, to Clark, J. L., Manufacturing Co. Childproof overcap for aerosol cans. 3,773,227, Cl. 222-153.000.
Lamb, F. Jos., Company: *See—*
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Lamport, Ivan R.; Rother, Francis J.; and Loyd, Calvin D., to Caterpillar Tractor Company. Metal belt drive. 3,772,930, Cl. 74-231.00m.
Landers, Leonard R.: *See—*
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Landi, Anthony O. Automobile theft prevention lock. 3,773,139, Cl. 180-114.000.
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Lang, Gerard, to L'Oreal. Process for preparing 1-hydroxy-3-methyl anthraquinones. 3,773,801, Cl. 260-383.000.
Lange, Hans, to Deutsche Texaco Aktiengesellschaft. Apparatus for controllable in-situ combustion. 3,772,881, Cl. 60-321.850.
Lange, Kai, to Nuclear Data (Ireland) Limited. Attenuated light coupling between scintillator and photomultiplier. 3,774,032, Cl. 250-366.000.
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Brady, Thomas P.; and Langer, Horst G., 3,773,964.
Langeron, Roger Jules. Method of detection in an alarm system. 3,774,044, Cl. 250-389.000.
Langille, Donald W.; deceased (by Langille, Olive I.; executrix), to ITT Rayonier Incorporated. Acetates of plicatic acid and processes for the preparation thereof. 3,773,792, Cl. 260-343.300.
Langille, Olive I.: *See—*
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Largman, Theodore; Stone, Herman; and Koch, Paul J., to Allied Chemical Corporation. Flame retardant linear polyesters. 3,773,715, Cl. 260-45.85r.
Larker, Hans; and Isaksson, Sven-Erik, to Allmonna Svenska Elektriska Aktiebolaget. Method of manufacturing a blade having a plurality of internal cooling channels. 3,773,506, Cl. 75-208.00r.
Larson, Dale, to Control Data Corporation. Lateral strip control apparatus. 3,773,983, Cl. 179-100.20t.
Laser, Lorenz: *See—*
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Lassau, Christian; Roux-Guerraz, Claude; and Sajus, Lucien, to Institut Francais du Petrole des Carburants et Lubrifiants. New catalytic process for converting hydrocarbons. 3,773,657, Cl. 208-124.000.
Lauer, George E.: *See—*
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Laukien, Gunther Rudi. Method of recording spin resonance spectra and a spin resonance spectrometer suited for the purpose. 3,774,103, Cl. 324-.50r.
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Lautenschlaeger, Karl, Kommanditgesellschaft: *See—*
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Lawson, Peter V. O., to Optasound Corporation. Tape and film synchronizing apparatus. 3,773,408, Cl. 352-16.000.
Le Carvennec, Francois, to Thomson-CSF. Camera system utilising a pyroelectric target. 3,774,043, Cl. 250-330.000.
Le Mieux, Robert W.: *See—*
Crossman, Phillip L.; Kenrick, Robert C.; and Le Mieux, Robert W., 3,773,325.
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Le Vesconte, Ivor J. R.: *See—*

Stapleton, Peter L.; and Le Vesconte, Ivor J. R., 3,772,721.

Leach, Bruce E., to Continental Oil Company. Removal of residual carbon contaminates from alumina. 3,773,691, Cl. 252-463.000.

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Leask, Raymond A.: *See—*
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Lechner, Hadrian B.; and Van Orden, Lynn L., to Bausch & Lomb Incorporated. Six component inverted telephoto projection lens. 3,773,403, Cl. 305-215.000.

Lechner, Thomas G.: *See—*
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Leder, Gustav, to USM Corporation. Multipane structure. 3,772,843, Cl. 52-616.000.

Lee, Charles A.; and Granberg, Frederick M., to International Paper Company, mesne. Method for converting plastic-containing broke to fluff. 3,773,613, Cl. 162-191.000.

Lee, Denis: *See—*
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Lee, Raymond, Organization, Inc., The: *See—*
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Lee, Thomas Brian: *See—*
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Lefkowitz, Issai, to Princeton Materials Science, Inc. Display apparatus and chronometer utilizing optically variable liquid. 3,772,874, Cl. 58-50.00r.

Lehment, Klaus-Friedrich; Schmitt, Ernst; and Raue, Roderich, to Bayer Aktiengesellschaft. Hydrazone dyestuffs. 3,773,764, Cl. 260-240.00g.

Lehmkuhl, Herbert, to Studiengesellschaft Kohle mbH. Electrochemical production of transition metal organometallic complexes. 3,773,632, Cl. 204-59.0qm.

Lehnert, Gunther, to Hackethal Draht- und Kabil-Werke Aktiengesellschaft. Coilable waveguide. 3,772,772, Cl. 29-600.000.

Lehrer, Ronald G.: *See—*
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Leiser, Leo; and Darcy, Emile A., to Columbia Broadcasting System, Inc. Selective excitation of a gaseous region. 3,774,063, Cl. 313-73.000.

Lemon, William C. Container carrier. 3,773,214, Cl. 220-115.000.

Lentz, Robert C.; and Turley, Royal K., to International Business Machines Corporation. Document card transport mechanism. 3,773,162, Cl. 197-127.00r.

Lenz, Arnold: *See—*
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Leonard, Wilbur Valentine, to Bell Bryant Pty. Ltd. Apparatus for use in processing curd in the manufacture of cheese. 3,772,786, Cl. 99-456.000.

Lesk, Adolf; and Link, Ottmar, to Zimmermann, Adolf, Maschinenbau. Apparatus for the fine dosaging of substances. 3,773,221, Cl. 222-56.000.

Lester, George R.: *See—*
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Miles Laboratories, Inc.: *See—*
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Mohammed, Kasheed; and Blake, Jeremy, to Johnson & Johnson. Amino acid composition. 3,773,930, Cl. 424-180.000.

Mohan, Raam R.: *See—*
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Mohawk Data Sciences Corporation: *See—*
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Monsanto Company: *See—*
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Perry, Eli; and Strazik, William F., 3,773,844.
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Moore, Arthur H.: *See—*
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Moore, Duncan Thomas, to Western Electric Company, Incorporated. Telecentric lens. 3,773,404, Cl. 350-226.000.

Moore, Lawrence A.; and Voll, Gordon R., to Beloit Corporation. Parison oven with improved parison removal structure. 3,773,192, Cl. 214-21.000.

Moore, Ward J.; Ingersoll, Philip F.; Richter, Arnold; and Kieffer, William L., to United States of America, Army. Turbine alternator utilizing fluid bearings. 3,772,992, Cl. 102-70.20g.

Moran, Kevin P. Stack gas scrubber. 3,772,856, Cl. 55-238.000.

Morfax Limited: *See—*
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Morgan, David W., to Corning Glass Works. Glasses containing cadium sulfide as a colorant. 3,773,530, Cl. 106-54.000.

Morgan, Everett V.; Haynes, Robert W.; and Schmidt, Gordon F. Metering apparatus. 3,773,220, Cl. 222-48.000.

Morgan, Joe M.: *See—*
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Morgan, Walter A., to Esso Research and Engineering Company. Method of forming ribbed battery separators. 3,773,590, Cl. 156-244.000.

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Mori, Toshiyuki; Okada, Takeshi; Konoshita, Kunio; and Ouchi, Teruo, to Olympus Optical Co., Ltd. Endoscope. 3,773,039, Cl. 128-6.000.

Morimoto, Mamoru; Saito, Masahiro; and Goukon, Atsushi, to Kao Soap Co., Ltd. Process for polymerizing unsaturated fatty acids and their esters. 3,773,806, Cl. 260-407.000.

Morley Furniture Company: *See—*
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Morozowich, Walter; and Oesterling, Thomas O., to Upjohn Company, The. Organic compounds. 3,773,754, Cl. 260-210.00r.

Morrill, Wayne J. Flexible machine mounting. 3,773,285, Cl. 248-15.000.

Morris, Hallie E. Apparatus for elevating construction elements. 3,773,200, Cl. 214-620.000.

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Morris, Philip, Incorporated: *See—*
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Morrison, Howard J.; and Glass, Marvin I., to Glass, Marvin, & Associated. Operator propelled toy vehicle. 3,773,354, Cl. 280-218.000.

Morse, Alfred W., to Westinghouse Electric Corporation. Voltage variable solid state line type modulator. 3,774,054, Cl. 307-246.000.

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Mrozik, Helmut H., to Merck & Co., Inc. 4-Azosulfonamides as anthelmintics for treating liver fluke. 3,773,935, Cl. 424-226.000.

MTS Systems Corporation: *See—*
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Mueller, Otto. Variable torque transmission. 3,773,130, Cl. 180-24.090.

Mueller, Wolfgang H.; Oswald, Alexis A.; and Hall, Daniel N., to Esso Research and Engineering Company. Addition of hydrocarbon sulfenyl halides to olefins. 3,773,839, Cl. 260-609.00r.

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Mune, Charles, to Heinemann Electric Company. Circuit breaker case. 3,773,992, Cl. 200-144.00r.

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Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, to Matsushita Electric Industrial Co., Ltd. Control system for magnetic recording and reproducing apparatus. 3,773,277, Cl. 242-201.000.

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Nagau, Shigeo: *See—*
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Nagyvary, Joseph, to United States of America, Health, Education and Welfare. Conversion of cytidylic acid into aracytidine-3'-phosphate. 3,773,755, Cl. 260-211.50r.

Naito, Morihisa, to Matsushita Electric Industrial Co., Ltd. Tape cartridge ejecting device. 3,773,334, Cl. 274-4.00f.

Nakahara, Yasuji: *See—*
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Nakamoto, Atsushi; Ogawa, Keizaburo; and Ukigaya, Roche, to Mikken Chemicals Co., Ltd. Sustained release medicinal composition. 3,773,920, Cl. 424-19.000.

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Nakashima, Akira: *See—*
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National Cash Register Company, The: *See—*
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National Steel Corporation: *See—*
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Neri, Carlo; and Perrotti, Emilio, to Snam Progetti S.p.A. Process for preparing epoxide compounds. 3,773,798, Cl. 260-348.00r.

Nesslage, Donald J.; and Yu, Lin S., to Phelps Dodge Industries, Inc. Copper base alloy containing titanium and antimony. 3,773,505, Cl. 75-164.000.

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Newman, Joseph W. Knife. 3,772,781, Cl. 30-123.000.

Newton, Albert E., to USM Corporation. Self-drilling and sealing rivet. 3,772,957, Cl. 85-68.000.

Newton, Dennis Sydney; and Winchcombe, Plier David, to British Steel Corporation. Fluorocarbon polymer coated substrate. 3,773,544, Cl. 117-49.000.

Ng, David M.; and Rehkopf, Charles H., to GTE Sylvania Incorporated. Process for achieving a controlled gradient density coating on a light attenuation medium. 3,773,541, Cl. 117-33.300.

Nicolaus, Horst F. E.; and Pietsch, Helmut E. W., to Vereinigte Papierwerke Schickedanz & Co. Method and apparatus for forming composite sheets of reinforced, nonwoven fibrous materials. 3,773,592, Cl. 156-272.000.

Nielson, Lonnie Ray. Inventory-recording apparatus. 3,774,228, Cl. 346-104.000.

Nigro, Louis V., to Gillette Company, The. Container-dispenser package for plurality of products. 3,772,715, Cl. 4-228.000.

Niimi, Itaru; Kaneko, Yasuhisa; Komiyama, Yoshiro; Uichiyama, Yoshiki; Takeda, Yasuo; and Maeda, Shirou. Copper base alloy having wear resistance at high temperatures. 3,773,504, Cl. 75-157.500.

Nikles, Erwin, to Ciba-Geigy AG. Carbamoyloximino alkenyl dithialones used as insecticides. 3,773,942, Cl. 424-277.000.

Nikolsky, Boris Petrovich; Shults, Mikhail Mikhailovich; Pisarevsky, Alexandr Moiseevich; Beljustin, Anatoly Alexandrovich; Bolkhontseva, Sofia Konstantinovna; Dolidze, Vladimir Alexandrovich; Tarasova, Valentina Mikhailovna; Karachentseva, Julia Mikhailova; and Dolmazova, Liana Iosifovna. Electron-conductive glass. 3,773,642, Cl. 204-195.00g.

Nilles, Paul-Emile; and Noel, Yvon-Paul, to Centre de Recherches Metallurgiques and Centrum voor Research in de Metallurgie. Process for the automatic control of the pig iron refining operation. 3,773,495, Cl. 75-60.000.

Nipe, Richard N., to Standard Oil Company. Polyphthalamide thickened greases. 3,773,666, Cl. 252-51.50a.

Nippon Air Brake Co., Ltd., The: *See—*
Takagi, Makoto; and Nitta, Akifumi, 3,772,937.

Nippon Electric Company, Limited: *See—*
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Nippon Keori Co., Ltd.: *See—*
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Nippon Kogaku K.K.: *See—*
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Nippon Kokan Kabushiki Kaisha: *See—*
Kunioka, Kazuo; Tanaka, Junichi; Noguchi, Takao; Ikoma, Tsutomu; Kitada, Toyofumi; and Tanaka, Jinkichi, 3,773,260.

Nippon Peroxide Co., Ltd.: *See—*
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Nippon Steel Corporation: *See—*
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Nippon Toki Kabushiki Kaisha: *See—*
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Nippondenso Co., Ltd.: *See—*
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Nissan Motor Company: *See—*
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Nissan Motor Company, Limited: *See—*
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Toshida, Shunichi; Kuroki, Tadashi; Someya, Nobutaka; Yano, Tadashi; and Ozora, Takashi, 3,773,149.

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Nitta, Akifumi: *See—*
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Nixon, Douglas C. Cultivator. 3,773,113, Cl. 172-642.000.

Noble, Peter M.; and Carey, John H., to Westinghouse Air Brake Company. Noise abating barrier. 3,772,993, Cl. 104-1.00r.

Noel, Yvon-Paul: *See—*
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Noguchi, Haruyuki, to Hitachi, Ltd. Washing machine having waste threads screening means. 3,772,902, Cl. 68-18.00f.

Noguchi, Takao: *See—*
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Nolette, Jerry E., to North American Rockwell Corporation. Squint-mode spatial filter. 3,774,202, Cl. 343-5.0cm.

Noll, Ewald: *See—*
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Nongbri, Govanon; Alpert, Seymour B.; and Wolk, Ronald H., to Hydrocarbon Research, Inc. Production of coker feedstocks. 3,773,653, Cl. 208-50.000.

Norfin, Inc.: *See—*
Snellman, Donald L.; Davis, Ernest D.; and Johnson, Dale R., 3,772,970.

Norris, Douglas C. Tube and shaft finning machines. 3,773,241, Cl. 228-5.000.

North American Dye Corporation Limited, The: *See—*
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North American Philips Corporation: *See—*
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Notelteirs, Victor Rosallie: *See—*
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Novi, Giuseppe. Seamless brassieres and brassiere blanks. 3,772,899, Cl. 66-176.000.

Nowacki, Eduard, to May-Fran GmbH. Conveyors for metal clips. 3,773,166, Cl. 198-196.000.

Nowak, Bernard E.; Economy, James; and Cottis, Steve G., to Carborundum Company, The. Substantially void-free impact molded article of infusible oxybenzol polyesters. 3,773,858, Cl. 260-873.000.

Nozik, Arthur Jack, to American Cyanamid Company. Cadmium stannate yellow pigment and method of preparation. 3,773,914, Cl. 423-593.000.

Nuclear Data (Ireland) Limited: *See—*
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N.V. Ingenieursbureau voor Systemen en Octrooien "Spanstaal": *See—*
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Nyquist, Stephen E., to Warner Electric Brake and Clutch Company. Clutch-brake and motor circuit for engine-driven implements. 3,773,156, Cl. 192-.094.

Oberbacher, Bonifaz: *See—*
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Bjorkman, Harry K., 3,773,561.

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O'Connor, Donald T.; Graham, Bruce C.; and Prine, David W., to Magnaflux Corporation. Defect detecting and indicating means for nondestructive testing. 3,774,030, Cl. 250-302.000.

Oehring, Leo G.: *See—*
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Oesterling, Thomas O.: *See—*
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Oestowski, Franciszer, to Dow Chemical Company, The. Process for preparing rapid-setting non-cellular polyurathanes. 3,773,697, Cl. 260-18.0tn.

Ogawa, Francis T., to Honeywell Inc. Remotely powered quench control sensing transmitter. 3,774,072, Cl. 315-151.000.

Ogawa, Keizaburo: *See—*
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Ogawa, Mitsuro. Process for installing compacted sand columns in the ground. 3,772,892, Cl. 61-35.000.

Ogden, Charles Thomas: *See—*
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Ogilvie, Allan Rhodes, to FRL Incorporated. Electrostatic potential detector. 3,774,108, Cl. 324-72.000.

Ohashi, Koichi, to Sumitomo Chemical Company, Limited. Two-component adhesive composition. 3,773,702, Cl. 260-31.20n.

Ohashi, Toshiro, to Izumi Denki Company, Limited. Motor timer. 3,774,127, Cl. 335-68.000.

Ohi, Reiichi; Miyazako, Takushi; and Shishido, Tadao, to Fuji Photo Film Co., Ltd. Method of hardening synthetic polymer with heterocyclic azoles. 3,773,731, Cl. 260-79.5nv.

Ohnaka, Jumpei. Motive and propulsion mechanism for use in the water. 3,772,719, Cl. 9-307.000.

Ohtsuka, Kunio; and Miyauchi, Toshiyuki. Multiple disc type friction brake for an automotive automatic power transmission. 3,772,940, Cl. 74-785.000.

Ohyama, Isao: *See—*
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Ohyama, Yasushi; and Miyazawa, Sadayuki, to Mitsubishi Paper Mills, Ltd. Mordanting process for color printing materials. 3,773,509, Cl. 96-57.000.

Okada, Takeshi: *See—*
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Okamoto, Kentaro: *See—*
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Olejkowski, Edwin: *See—*
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Omkura, Toshikiko: *See—*
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O'Neill, Charles Edward, to International Nickel Company, Inc., The. Acid leaching of lateritic ores. 3,773,891, Cl. 423-139.000.

Ono, Hisatake: *See—*
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Op de Beeck, Herbert Kamiel Maria; and Notelteirs, Victor Rosallie, to U.S. Philips Corporation. Hologen filament lamp. 3,774,065, Cl. 313-344.000.

Optasound Corporation: *See—*
Lawson, Peter V. O., 3,773,408.

Opti-Holding AG: *See—*
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Optical Coating Laboratory, Inc.: *See—*
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Optical Recognition Systems, Incorporated: *See—*
Burroughs, Frank P., 3,773,321.

Orange, John M., to Gulf Research & Development Company. Radioactive source handling apparatus. 3,772,376, Cl. 294-86.00a.

Orenstein & Koppel Aktiengesellschaft: *See—*
Bomeke, Josef, 3,772,804.

Orlando, John B., to Lamb, F. Jos., Company. Hydrostatic transfer drive. 3,772,888, Cl. 60-444.000.

Orlando, Vincent A., to General Motors Corporation. Magnetic type sensor. 3,774,128, Cl. 335-81.000.

Orr Felt Company, The: *See—*
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Orr, Robert F., to Fluorocarbon Company, The. Semi-conductor wafer processing apparatus. 3,772,980, Cl. 95-89.00d.

Orsatti, Louis G.: *See—*
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Orthoband Company, Inc.: *See—*
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Orzechowski, Walter J.: *See—*
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Osada, Chiaki; and Ono, Hisatake, to Fuji Photo Film Co., Ltd. Imagewise exposing and heating a photo-sensitive composition containing a spiropyran compound and an organic peroxide. 3,773,508, Cl. 96-48.00r.

Osaka Soda Co., Ltd.: *See—*
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Osakeyhtio, A. Ahlstrom: *See—*
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Osborne, Duncan William; and Chouings, Leslie Cyril, to Automotive Products Company Limited. Fluid pressure braking systems for vehicles. 3,773,367, Cl. 303-22.00r.

O'Shea, Daniel P.: *See—*
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Osterberg, Bruce H.; Caldwell, William W.; Orzechowski, Walter J.; Pace, Herbert D.; and Murphy, Arthur J., to Western Data Products, Inc. Data terminal system. 3,774,164, Cl. 340-172.500.

Osterreichische Mineralolverwaltung Aktiengesellschaft: *See—*
Senolt, Hans; Tomaschko, Heinrich; and Palvik, Georg, 3,773,649.

Oswald, Alexis A.: *See—*
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P & O Pilgrim Valve Limited: *See—*
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Pachter, Irwin Jacob; and Gordon, Maxwell, to Bristol-Myers Company. Analgetic compositions. 3,773,955, Cl. 424-260.000.

Pacific Grinding Wheel Co., Inc.: *See—*
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Padgett, Richard A., to GTE Automatic Electric Laboratories Incorporated. Trunk timer arrangement. 3,774,175, Cl. 340-173.00r.

Padilla, John R.: *See—*
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Palazzetti, Mario; and Cavallarin, Bruno, to Fiat Societa per Azioni. Automatic motorway driving system for motor vehicles. 3,773,136, Cl. 180-98.000.

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Palmer, Myron N.: *See—*
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Panico, Joseph J., to Health Systems, Inc. Defibrillator with flash tube switch. 3,773,050, Cl. 128-419.00d.

Panico, Joseph J., to Health Systems, Inc. Megatrol-high energy transmitter switch. 3,774,112, Cl. 325-164.000.

Pannell, Calvin E., to Dow Chemical Company, The. Pyridyl azides and derivatives thereof. 3,773,774, Cl. 260-294.900.

Panzarino, Joseph N.: *See—*
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Papa, Anthony Joseph; Proops, William Robert; and Shields, Theodore Curtis, to Union Carbide Corporation. Tetrabromo ether diol a flame-retardant for polyurethane. 3,773,696, Cl. 260-2.5aj.

Papin, Joseph E., to Wagner Electric Corporation. Control valve and system. 3,773,363, Cl. 303-6.00c.

Parc, Guy: *See—*
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Park-Ohio Industries, Inc.: *See—*
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Parke, Davis & Company: *See—*
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Parker, Calvin E., Sr., to Bethlehem Steel Corporation. Coating apparatus with fluid doctor blade. 3,773,013, Cl. 118-63.000.

Parrigin, Albert J.: *See—*
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Parrock, Joseph J., to Mosler Safe Company, The. Lock with changeable guard and locking keys. 3,772,904, Cl. 70-339.000.

Parsons, Perry B.: *See—*
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Parth, William H., to Dow Chemical Company, The. Apparatus for detecting organic materials in water. 3,774,185, Cl. 340-236.000.

Pasquire, Derek James; and Burton, Peter Edward, to Pressed Steel Fisher Limited. Resistance welding control. 3,774,006, Cl. 219-111.000.

Pastrone, John: *See—*
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Patterson, Robert B.: *See—*
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Patterson, William A.: *See—*
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Paul, Richard H., to Uniroyal, Inc. Conically molded and slot-formed inner tube for tires. 3,773,095, Cl. 152-349.000.

Pavone, Robert J.; and Landers, Leonard R., to Gerber Scientific Instrument Company, The. Method and apparatus for cutting sheet material. 3,772,949, Cl. 83-56.000.

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Pearce, Reginald James: *See—*
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Pearl, David R., to Garber Garment Technology, Inc. Stiffened cutting blade with replaceable edge member. 3,772,955, Cl. 83-74.00g.

Pearlman, Donald; Carnall, Edward, Jr.; and Martin, Thomas W., to Eastman Kodak Company. Chalogenide spinel powders. 3,773,909, Cl. 423-508.000.

Pecksen, Otto, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Device for cutting the anchor cables of sea mines. 3,773,009, Cl. 114-221.00a.

Peddinghaus, Carl Ullrich. Bending machine for bars, wires and sections. 3,772,905, Cl. 72-22.000.

Pedersen, Thomas Josep, to Bell Telephone Laboratories, Incorporated. Dilateral switching array with crosspoint storage. 3,773,980, Cl. 179-15.0aq.

Peerless Mfg. Co.: *See—*
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Peluchiwski, John J.: *See—*
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Penasse, Lucien; and Barthelemy, Pierre, to Roussel-UCLAF. Novel preparation of substituted cobamides. 3,773,756, Cl. 260-211.700.

Pennington, Rohe V., to Improved Machinery, Inc. Drum comprising support mounted grid structure. 3,773,614, Cl. 162-357.000.

Pepper, Michael, to Piessey Handel und Investments A.G. Memory elements. 3,774,087, Cl. 317-235.00r.

Perera, Luis A. Process of making candles by sequentially casting different wax layers. 3,773,881, Cl. 264-155.000.

Perfect Equipment Corporation: *See—*
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Permawick Company, Inc.: *See—*
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Pernik, John F., Jr.: *See—*
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Perper, Lloyd J.: *See—*
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Perry, Eli; and Strazik, William F., to Monsanto Company. Process for the separation of alkene from organic mixtures containing same. 3,773,844, Cl. 260-669.00a.

Perry, Eli; and Strazik, William F., to Monsanto Company. Process for the separation of diene from organic mixtures. 3,773,848, Cl. 260-681.50r.

Pester, William B.: *See—*
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Peter, Martin: *See—*
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Peterson, Donovan F. Control circuit for regulating electric motor speed. 3,774,094, Cl. 318-331.000.

Petrik, Stephen. Towable sleighs. 3,773,342, Cl. 280-12.00h.

Pfeifer, Josef; Eigner, Horst; and Hofmann, Wilfried, to Agfa-Gevaert Aktiengesellschaft. Container for photographic film or the like. 3,773,409, Cl. 325-75.000.

Pfeiffer, Arthur, Vakuumtechnik GmbH: *See—*
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Pfiffner, Albert: *See—*
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,773,797.

Pfizer Inc.: *See—*
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Phelps Dodge Industries, Inc.: *See—*
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Phillips, Brian L.: *See—*
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Phillips, George F., to North American Dye Corporation Limited, The. Medication dispensing. 3,773,250, Cl. 229-69.000.

Phillips Petroleum Company: *See—*
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Phoenix Closures, Inc.: *See—*
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Souza, Augustine A., 3,773,233.

Piazza, Matteo J.; and Reese, Cecil E., to Du Pont de Nemours, E. I., and Company. Polyester yarn for draw-texturing process. 3,772,872, Cl. 57-140.00r.

Piccolo, Luigi: *See—*
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Piet, Gerrit Johan: *See—*
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Pietsch, Helmut E. W.: *See—*
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Pihlstrom, Lance W., to Minnesota Mining and Manufacturing Company. Acoustical material. 3,773,605, Cl. 161-43.000.

Pilet, Charles. 2-Aminopyrimidine ethylmercurithiosalicylate. 3,773,760, Cl. 260-242.000.

Pilipovich, Donald: *See—*
Schack, Carl J.; and Pilipovich, Donald, 3,773,901.

Pincus, Alexis G.: *See—*
Ali, Mir Akbar; Bratschun, William R.; and Pincus, Alexis G., 3,773,528.

Pinkowski, Alexander; and Uhlig, Hans-Werner, to Kombinat VEB Galvanische Elemente. Alkaline primary battery cells. 3,773,562, Cl. 136-107.000.

Pipoly, Richard A.: *See—*
Burgyan, Aladar; Pipoly, Richard A.; and Stelzer, Paul H., 3,773,535.

Pisarevsky, Alexandr Moiseevich: *See—*
Nikolsky, Boris Petrovich; Shults, Mikhail Mikhailovich; Pisarevsky, Alexandr Moiseevich; Beljustin, Anatoly Alexandrovich; Bolkhontseva, Sofia Konstantinovna; Dolidze, Vladimir Alexandrovich; Tarasova, Valentina Mikhailovna; Karachentseva, Julia Mikhailova; and Dolmazova, Liana Iosifovna, 3,773,642.

Pisecky, Jan; and Westergaard, Vagn, to Aktieselskabet Niro Atomizer. Process for treating a powdered fat-containing milk product. 3,773,519, Cl. 426-99.000.

Pitney Bowes-Alpex, Inc.: *See—*
Berler, Robert M., 3,774,014.

Pittet, Alan O.; Muralidhara, Ranya; and Theimer, Ernst T., to International Flavors & Fragrances Inc. Flavoring with bicyclic dehydropiperazines. 3,773,525, Cl. 426-222.000.

Pittman, Allen G.: *See—*
Wasley, William L.; and Pittman, Allen G., 3,773,728.

Platz, Rolf; Fuchs, Werner; and Schoenaich, Guenther, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Manufacture aqueous ammonium iodide solutions. 3,773,906, Cl. 423-470.000.

Platzoeder, Karl; and Voss, Peter, to Siemens Aktiengesellschaft. Thyristor with means for internal breakthrough. 3,774,085, Cl. 317-235.00r.

Plesky, John J., to Anderson Company, The. Windshield wiper blade assembly. 3,772,730, Cl. 15-250.420.

Plessey Handel und Investments A.G.: *See—*
Hacon, William Frank, 3,773,989.
Henning, Michael Laurence; and Godfrey, Leslie Kenneth, 3,774,105.
Pepper, Michael, 3,774,087.

Plufgrad, Kurt: *See—*
Marmonier, Pierre; and Plufgrad, Kurt, 3,773,617.

Plumat, Emile; van Laethem, Robert; and Toussaint, Francois, to Glaverbel S.A. Fabrication and chemical tempering of vitreous products. 3,773,487, Cl. 65-30.000.

Plumat, Emile, to Gaverbel S.A. Non-oxide glass. 3,773,529, Cl. 106-47.00r.

Pneumatiques Croutchouc Manufacturing et Plastiques Kleber-Colombes: *See—*
Masson, Yves, 3,773,096.

Poe, Lloyd Richard; and Henrichs, Bernard W., to Hartwell Corporation. Overhead door control device. 3,773,311, Cl. 267-114.000.

Polar (Curacao) N.V., mesne: *See—*
Chromy, Franz, 3,773,122.

Polaroid Corporation: *See—*
Batter, John F., Jr.; Stella, Joseph A.; and Held, Albert W., 3,772,975.
Gutoff, Edgar B., 3,773,516.

Pollution Control Engineering, Inc.: *See—*
Hurst, George E., 3,773,179.

Poly Optics, Inc.: *See—*
Bronstein, Leonard, 3,773,868.

Pond, William W., to Marvalaud, Inc. Crystal sketching. 3,773,576, Cl. 156-6.000.

Poot, Albert Lucien; Van Besauw, Jan Frans; Heugebaert, Frans Clement; and Brinckman, Eric Maria, to Agfa-Gevaert N.V. Photothermic material containing a light-insensitive silver salt and an indane-1,3-dione reducing agent. 3,773,512, Cl. 96-48.0hd.

Poot, Pieter. Dough divider. 3,773,448, Cl. 425-93.000.

Popescu, Francine. Zinc electroplating baths. 3,773,630, Cl. 204-55.00r.

Portec, Inc.: *See—*
Steltz, Douglas C., 3,773,297.

Porter, Kenneth; and Richardson, Brian, to Imperial Chemical Industries Limited. Polycarbonamide preparation with diffusion of volatile by-products. 3,773,738, Cl. 260-78.00r.

Post, Herbert H.: *See—*
Johnson, Archie L.; and Post, Herbert H., 3,773,185.

Pottberg, Rolfe: *See—*
Renn, Charles E.; Pottberg, Rolfe; and Owens, Charles J., 3,772,712.

Pouch, Cyrillo: *See—*
Hankey, Robert E.; Arrizabalaga, Martin J.; Olejkowski, Edwin; Pouch, Cyrillo; and Snyder, Charles H., 3,772,773.

Powell Manufacturing Company, Inc.: *See—*
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PPG Industries Inc.: *See—*
Cuevas, Ephraim A.; and Johnston, Wayne S., 3,773,908.

Precision Field Coil Company: *See—*
Erwin, Henry P., Jr., 3,774,047.

Precision Valve Corporation: *See—*
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Preformed Line Products Company: *See—*
Williams, Harrison L., 3,772,718.

Preisler, Eberhard; Grapentin, Kurt; Harnisch, Heinz; and Mietens, Gerhard, to Knapsack Aktiengesellschaft. Process for the manufacture of artificial manganese dioxide. 3,773,916, Cl. 423-605.000.

Prenzel, Karl; and Barthel, Hans, to Ardie-Werk GmbH. Means for performing gear changes in multi-ratio gear-boxes. 3,772,933, Cl. 74-335.000.

Pressed Steel Fisher Limited: *See—*
Pasquire, Derek James; and Burton, Peter Edward, 3,774,006.

Prestininzi, Pete: *See—*
Macey, James G., 3,773,471.

Preston, Billie W., to Martin Marietta Corporation. Self coherent adaptive landing system. 3,774,204, Cl. 343-7.0ed.

Preusser, Gerhard; and Schulze, Martin, to Koppers, Heinrich, Gesellschaft mit beschrankter Haftung. Washing agent and a process for washing acidic components from a gas stream. 3,773,896, Cl. 423-226.000.

Price, Earl T., to Scientific Technology Incorporated. Photoelectric apparatus for detecting light reflected from an object. 3,774,039, Cl. 250-552.000.

Prigozhin, Evgeny Semenovich: *See—*
Ruppeneit, Konstantin Vladimirovich; Prigozhin, Evgeny Semenovich; Denisov, Vsevolod Nikolaevich; and Golubev, Alexandr Vasilievich, 3,772,911.

Princeton Materials Science, Inc.: *See—*
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Prine, David W.: *See—*
O'Connor, Donald T.; Graham, Bruce C.; and Prine, David W., 3,774,030.

Process Systems, Inc.: *See—*
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Procter & Gamble Company, The: *See—*
Adam, Wolfgang E.; and Barrat, Christian, 3,773,674.
Aubert, Lawrence Joseph, 3,773,683.
Damico, Ralph A., 3,773,770.
Jenkins, Peter Anthony; and Ritchie, Alexander, 3,773,673.

Profughi, Terence C., to Technical Metal Processing, Inc. Horse walker. 3,773,018, Cl. 119-29.000.

Progil: *See—*
Masotti, Robert M., 3,773,639.

Progress-Elektrogerate Mauz & Pfeiffer: *See—*
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Proops, William Robert: *See—*
Papa, Anthony Joseph; Proops, William Robert; and Shields, Theodore Curtis, 3,773,696.

Proudian, Andrew P.: *See—*
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Prouhet, Jacques Francois Robert: *See—*
Guienne, Paul Francois; and Prouhet, Jacques Francois Robert, 3,773,008.

Provost, George A., to American Velcro, Inc. Bonding fastening members to a substrate. 3,773,580, Cl. 156-66.000.

Pschunder, Willi: *See—*
Fischer, Horst; and Pschunder, Willi, 3,772,768.

Puckette, Charles McD.; and Butler, Walter J., to General Electric Company. Control logic circuit for analog charge-transfer memory systems. 3,774,167, Cl. 340-172.500.

Pudek, Marian F.: *See—*
Worster, Hans E.; and Pudek, Marian F., 3,773,611.

Pullman Incorporated: *See—*
Schuller, James J., 3,772,996.
Schuller, James J., 3,773,194.

Purex Corporation, Limited: *See—*
Bland, Marshall Richard, 3,773,178.

Puskas, Imre; and Fields, Ellis K., to Standard Oil Company. Copolymeric polyamide-acids, amide-imides and copolyimides containing azo linkage and process for their preparation. 3,773,725, Cl. 260-47.0cp.

Putilin, Alexandr Sergeevich: *See—*
Rabichev, Lev Yakovlevich; Vasiliev, Vladislav Fedorovich; Putilin, Alexandr Sergeevich; Ilina, Tatyana Grigorievna; Raku, Petr Vasilievich; and Kernitsky, Leopold Pavlovich, 3,773,049.

Puzniak, Thomas J.: *See—*
Alessio, Robert M.; Palmer, Myron N.; and Puzniak, Thomas J., 3,774,027.

Pye, Angus Charles; and Lundgren, Bengt, to SKF Industries, Inc. Zone refining. 3,773,565, Cl. 148-1.000.

Queiser, Horst; and Meichsner, Othmar, to Licentia Patent-Verwaltungs-G.m.b.H. Treatment process. 3,773,177, Cl. 210-68.000.

Quintex Corporation: *See—*
Sorensen, Irvin; and Rowe, William D., 3,772,950.

Quirk, Robert W., to Rheem Fluid Systems, Inc. Two-stage filament winding of T-shaped hollow products. 3,773,583, Cl. 156-175.000.

R-Tron Corporation: *See—*
Bullivant, Kenneth W., 3,773,124.

Rabichev, Lev Yakovlevich; Vasiliev, Vladislav Fedorovich; Putilin, Alexandr Sergeevich; Ilina, Tatyana Grigorievna; Raku, Petr Vasilievich; and Kernitsky, Leopold Pavlovich. Apparatus for the treatment of neuropsychic and somatic diseases with heat, light sound and VHF electromagnetic radiation. 3,773,049, Cl. 128-362.000.

Radice, John G., to Singer Company, The. Switch with interchangeable blades. 3,773,988, Cl. 200-6.00r.

Radke, Donald G. Multiple ignition system for air cushion gas supply. 3,773,352, Cl. 280-150.0ab.

Radtke, Charles Stephan. Opening tab for easy open container. 3,773,210, Cl. 220-54.000.

Raefield, Robert W., to Systems Enterprises Inc. Washing machine including oscillatory spray system. 3,773,266, Cl. 239-243.000.

Raffaelli, Joseph Gino; and Palmer, Reed Albert, to International Telephone and Telegraph Corporation. Electrical ignition apparatus. 3,774,077, Cl. 317-98.000.

Rain Jet Corporation: *See—*
Hruby, John O., Jr., 3,773,257.

Rain Jet Corporation, mesne: *See*—
Hruby, John O., Jr., 3,773,258.
Raistakka, John E. Conduit structure for migrating fish. 3,772,891, Cl. 61-21.000.
Raku, Petr Vasilievich: *See*—
Rabichev, Lev Yakovlevich; Vasiliev, Vladislav Fedorovich; Putilin, Alexandr Sergeevich; Ilina, Tatyana Grigorievna; Raku, Petr Vasilievich; and Kernitsky, Leopold Pavlovich, 3,773,049.
Raman, Ananiha K. S.: *See*—
Bernstein, Leonard S.; Raman, Ananiha K. S.; and Wigg, Eric E., 3,773,894.
Rao, Prabhakar B. R., to Fluidics, Inc. Heat exchange unit to regulate the temperature of recirculating hydraulic fluid for operating hydraulic systems of machinery. 3,772,896, Cl. 62-79.000.
Raschke, Herbert A., to Bullard, E. D., Company. Air flow control valve. 3,773,080, Cl. 137-625.320.
Rasquin, John R.: *See*—
Smith, Hubert E.; Rasquin, John R.; and Taylor, Roy A., 3,773,038.
Ratcliff, John W. Convertible bed. 3,772,716, Cl. 5-10.000.
Rath, Klaus Ferdinand; and Ruckert, Hans-Jurgen. Method for making packaging material. 3,773,876, Cl. 264-47.000.
Rattenbury, Kenneth H., to Weston Chemical Corporation. Olefinic polymers stabilized with thioacyl trivalent phosphorus compounds. 3,773,716, Cl. 260-45.850.
Ratzlaff, Waldo O. Carrying case for fishing rods and reels. 3,772,819, Cl. 43-26.000.
Rauch, Sol, to Canadian Marconi Company. Pseudo-randomly phase modulated radar altimeter. 3,774,206, Cl. 343-7.00a.
Raue, Roderich: *See*—
Lehment, Klaus-Friedrich; Schmitt, Ernst; and Raue, Roderich, 3,773,764.
Rauensusch, Erich: *See*—
Wagner, Otto; Bauer, Klaus; Kaufmann, Wilfried; Rauensusch, Erich; Arens, Alfred; and Irion, Eckart, 3,773,624.
Rausch, Richard E., to Universal Oil Products Company. Hydrotreating of hydrocarbons. 3,773,654, Cl. 208-57.000.
Rava, Sergio; and Rolfo, Arturo, to Olivetti, Ing., C., & C., S.p.A. Obliterating sign type carrier for typewriting or similar machines. 3,773,160, Cl. 197-36.000.
Raven Industries, Inc.: *See*—
Wright, Theron E., 3,773,279.
Ray, Charles William, to Bandy, Emmett O. Apparatus for effecting operations on a fitting on a high pressure gas main. 3,773,067, Cl. 137-318.000.
Raymond International Inc.: *See*—
Godley, Augustus P.; Fuller, Francis M.; Houk, Charles R.; Holland, Henry A. Nelson; and Gendron, George J., 3,772,894.
Raytheon Company: *See*—
Chambers, Derek, 3,774,161.
Collins, John D., 3,774,201.
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RCA Corporation: *See*—
Amodei, Juan Jose; and Staebler, David Lloyd, 3,773,400.
Clark, Robert John, 3,774,158.
Marlowe, Frank Jerome; and Wine, Charles Martin, 3,774,116.
Shidlovsky, Isal, 3,773,540.
Readio, Philip D.: *See*—
Schrage, Albert; and Readio, Philip D., 3,773,855.
Rebentisch, Hans Waldemar, to USM Corporation. Apparatus for dispensing heat softenable adhesive initially in granule form. 3,773,069, Cl. 137-341.000.
Rebish, Edward J., to Acme-Cleveland Corporation. Foundry mixing machine. 3,773,299, Cl. 259-4.000.
Rebua, Giovanni: *See*—
Tricoli, Antonio; Battarra, Alberto; Rebua, Giovanni; and Bestetti, Luigi, 3,773,644.
Recoque, Alice Maria, to Compagnie Internationale pour l'Informatique. Hierarchized priority task chaining apparatus in information processing systems. 3,774,163, Cl. 340-172.500.
Redmond, John D., Jr., to Gates Rubber Company, The. Cog-belt and method for its production. 3,772,929, Cl. 74-231.00c.
Reed, Roger R., to General Systems Development Corporation, mesne. Position locating system. 3,774,215, Cl. 343-112.00d.
Reese, Cecil E.: *See*—
Piazza, Matteo J.; and Reese, Cecil E., 3,772,872.
Regan, Bernard M., to Baxter Laboratories, Inc. Difluoromethyl 1,2,2,3,3-tetrafluoropropyl ether. 3,773,840, Cl. 260-614.00f.
Regan, Bernard M., to Baxter Laboratories, Inc. 1-Chloro-2,2,3,3-tetrafluoropropyl difluoromethyl ether. 3,773,841, Cl. 260-614.00f.
Regelson, William, to Hercules Incorporated. Preventing Herpes virus infections with copolymers of divinyl ether and maleic anhydride. 3,773,923, Cl. 424-78.000.
Regie Nationale des Usines Renault: *See*—
Coursault, Roger M.; and Fourrey, Francois, 3,773,382.
Regitz, William M., to Honeywell Information Systems, Inc. Read only memory organization. 3,774,171, Cl. 340-173.0sp.
Regus, John U.: *See*—
Luiten, Peter H.; and Regus, John U., 3,773,392.
Rehkopf, Charles H.: *See*—
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Reichenbach, Jerry D.: *See*—
Horve, Leslie A.; Reichenbach, Jerry D.; and Gabrys, Kenneth F., 3,773,454.
Reimann, Gerhard; and Weichmann, Otto Friedrich, to Rheinstahl AG. Method and apparatus for burning gypsum. 3,773,892, Cl. 423-171.000.
Reimer, William A., to GTE Automatic Electric Laboratories, Incorporated. Connectorless plug-in printed wiring card. 3,774,140, Cl. 339-17.00c.
Reinecke, Erich; Isernhagen, Fritz; Klatt, Alfred; and Holthusen, Erwin, to Westinghouse Bremsen-und Apparatebau GmbH. Antiskid device for car wheels especially for road vehicles. 3,773,366, Cl. 303-21.00f.
Reineke, Charles E., to Dow Chemical Company, The. Fire retardant polyester plasticizers. 3,773,825, Cl. 260-485.00g.
Reinhards, Gunter: *See*—
Stosberg, Herbert; Reinhards, Gunter; Engels, Siegfried; and Sauer, Hans-Jurgen, 3,772,733.
Reisner, David B.; Ludwig, Bernard J.; Berger, Frank M.; and Sofia, Robert D., to Carter-Wallace, Inc. Methods for relieving pain. 3,773,953, Cl. 424-251.000.
Reiss, Gerhard: *See*—
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Reitemeier, Rudolf: *See*—
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Relion Radiation Limited: *See*—
Roullier, Henry Albert, 3,772,713.
Renn, Charles E.; Pottberg, Rolfe; and Owens, Charles J. Dry closet. 3,772,712, Cl. 4-142.000.
Reno, William H.; and Temple, Fred, to Westinghouse Air Brake Company. Air hose coupling with electrical connector. 3,773,186, Cl. 213-1.300.
Rentmeester, Kenneth Richard: *See*—
Kaiser, Edward William; and Rentmeester, Kenneth Richard, 3,773,589.
Repetto, Silvio, to S.p.A. Luigi Rizzi & C. Skin slicing machine. 3,772,951, Cl. 83-174.000.
Repola, Aldo. Pressurized decorating device. 3,773,225, Cl. 222-144.500.
Research Corporation: *See*—
Holcomb, Wade G.; Hogan, James F.; and Glenn, William W. L., 3,773,051.
McClure, William Fred; and Rohrbach, Roger Phillip, 3,773,172.
Zaias, Narbo, 3,773,959.
Research Engineering & Manufacturing, Inc., mesne: *See*—
Yamamoto, Yoshio, 3,772,720.
Research-Cottrell, Inc.: *See*—
Allen, Walter R., Jr., 3,773,308.
Restrepo, Tulio Vasquez. Watchman's tour alarm system. 3,774,193, Cl. 340-306.000.
Rex Chainbelt Inc.: *See*—
Crandall, Robert E.; and Eggert, Glenn J., 3,773,391.
Reynolds, Edward Henry, to British Insulated Callenders Cables Limited. Electric cables. 3,773,965, Cl. 174-25.00g.
Rheem Fluid Systems, Inc.: *See*—
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Rheinstahl AG: *See*—
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Rhone-Poulenc-Textile, S.A., mesne: *See*—
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Rice, Howard Gene: *See*—
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Rich, David Arthur: *See*—
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Richardson, Thomas L.: *See*—
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Richter, Arnold: *See*—
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Riddell, Thomas H.: *See*—
Dunlap, Bert J., III; and Riddell, Thomas H., 3,773,244.
Rider, George William, to AMP Incorporated. Crimping tool having an improved valve control mechanism. 3,772,907, Cl. 72-712.000.
Ridge, Ray H. Multiple fishing pole device. 3,772,816, Cl. 43-21.200.
Rigassi, Norbert: *See*—
Chodnekar, Madhukar Subraya; Pfiffner, Albert; Rigassi, Norbert; Schwieter, Ulrich; and Suchy, Milos, 3,773,797.
Rigby, Ronald William, to Lucas, Joseph, (Industries) Limited. Method of preparing an electrical component for connection to a member. 3,772,769, Cl. 29-574.000.
Riggs, Darius O., to Owens-Illinois, Inc. Phase compensated multiple moving head inspection apparatus. 3,772,922, Cl. 74-25.000.
Riggs, Robert F., to United States of America, Navy. Method for determining the closest point of approach. 3,774,213, Cl. 343-112.00d.
Ritchie, Alexander: *See*—
Jenkins, Peter Anthony; and Ritchie, Alexander, 3,773,673.
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Dixon, George S., Jr.; Gilbert, Edward O.; and Robaszkiewicz, Gerald D., 3,773,146.

Roberts, Bissett J. Vehicle ambulance. 3,773,198, Cl. 214-505.000.

Roberts, Edward S.; and Tuwiner, Sidney B., to Treadwell Corporation. SO_2 recovery and conversion to elemental sulfur. 3.773,900, Cl. 423-356.000.

Robertshaw Controls Company: *See—*
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Robertson Paper Box Company, Inc.: *See—*
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Robustelli, Ciro M.: *See—*
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Rocket Research Corporation: *See—*
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Rockwell International Corporation: *See—*
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Schack, Carl J.; and Pilipovich, Donald, 3,773,901.

Rodbard, Simon; and Mount, Bruce E., to City of Hope. Method and apparatus for obtaining and displaying cardiovascular data. 3,773,033, Cl. 128-2.06r.

Rodewald, Paul G., Jr.; Rowe, Carleton N.; and Heiba, El Ahmadi I., to Mobil Oil Corporation. Gamma-substituted-gamma-butyrolactone adducts of O,O-dialkyl-phosphorodithioic acids. 3,773,791, Cl. 260-343.600.

Rodrigue, Kenneth, to Can Machinery & Engineering Company, Inc. Sugar cane topping cutter and selective cut top director. 3,772,864, Cl. 56-63.000.

Rodriguez, Rodolfo, to Miles Laboratories, Inc. Method of treating depression with 1-(2-pyridyl) piperazine. 3,773,951, Cl. 424-250.000.

Rodzen, Richard A.: *See—*
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Roeder, Emil; and Collins, Richard, to Marotta Scientific Controls, Inc. Method and apparatus for ejection by compressed gas. 3,773,025, Cl. 124-11.00r.

Rohde & Schwarz: *See—*
Grosskopf, Herbert, 3,773,974.

Rohe, Lothar: *See—*
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Rolamite, Incorporated: *See—*
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Rolfo, Arturo: *See—*
Rava, Sergio; and Rolfo, Arturo, 3,773,160.

Romero, Bernardino S. Spring type spear projecting gun. 3,773,026, Cl. 124-22.000.

Rondestvedt, Christian Scriver, Jr., to Du Pont de Nemours, E. I., and Company. Fluorinated acrylic monomers containing hetro atoms. 3,773,826, Cl. 260-486.00h.

Ronsen, Gustav A.: *See—*
Carlson, Lee Gerald; and Ronsen, Gustav A., 3,773,659.

Rooney, Clarence S.: *See—*
Carlson John A.; Hoff, Dale R.; and Rooney, Clarence S., 3,773,781.

Roosa, Vernon D. Flushing device. 3,773,063, Cl. 137-217.000.

Roper, Hans-Joachim: *See—*
Eckert, Klaus-Dieter; and Roper, Hans-Joachim, 3,774,212.

Rosalik, Ronald R. Clip 024/081.0ab. 3,772,741, Cl. .

Roscamp, Thomas A., to Applied Magnetics Corporation. Pivotal support assembly for a magnetic head. 3,774,183, Cl. 340-174.10e.

Rose, John Brewster: *See—*
Feasey, Ronald George; and Rose, John Brewster, 3,773,820.

Rosenberg, Arthur J., to Cambridge Biomedical Corporation. Douche apparatus. 3,773,046, Cl. 128-230.000.

Ross, Dieter. Laser oscillator with intracavity amplitude stabilization means. 3,774,120, Cl. 331-94.500.

Ross, J. Richard: *See—*
George, Darcy R.; and Ross, J. Richard, 3,773,889.

Ross, Sidney D.; and Finkelstein, Manuel, to Sprague Electric Company. Di-N-substituted amide impregnants for electrical capacitors. 3,774,090, Cl. 317-258.000.

Rossi, Enzo; Giusti, Guido; and Imparato, Luigi, to Snam Progetti S.p.A. Antiwear and antiwelding additives for lubricants and compositions thereof. 3,773,815, Cl. 260-435.000.

Rossi, Harry J., to Federal Paper Board Company, Inc., mesne. Package. 3,773,170, Cl. 206-46.00r.

Rossi, Irving. Continuous casting of strands using thermal stress reinforcement. 3,773,099, Cl. 164-89.000.

Rotex Limited: *See—*
Sharpe, Raymond; and Hunt, Peter, 3,774,060.

Roth, Howard: *See—*
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Rother, Francis J.: *See—*
Lamport, Ivan R.; Rother, Francis J.; and Loyd, Calvin D., 3,772,930.

Rother, Helmut, to Henschke & Co., Hansel-Robhaar, KG. Yarn consisting of stiff hair and process for making the same. 3,773,582, Cl. 156-158.000.

Rothert, Horst: *See—*
Urgesi, Federico; and Rothert, Horst, 3,773,807.

Roullier, Henry Albert, to Relion Radiation Limited. Steam bath unit. 3,772,713, Cl. 4-164.000.

Roussel-UCLAF: *See—*
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Rouvet, Bernard P.: *See—*
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Rouzier, Georges, to Compagnie Generale des Etablissements Michelin raison sociale Michelin & Cie. Apparatus for continuous chemical reactions. 3,773,470, Cl. 23-252.00r.

Roveti, Denes, to Woodland, Daniel, Inc. Static electric field detector. 3,774,110, Cl. 324-133.000.

Rowan Investments, Ltd.: *See—*
Murfitt, Ralph, 3,773,230.

Rowe, Carleton N.: *See—*
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Rowe, William D.: *See—*
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Rowland, Bobby A.; and Tate, Stanley L., to Southwire Company. Polyethylene stabilized with 2,6-di (1-methyl heptadecyl)-4-alkyl phenol. 3,773,556, Cl. 117-232.000.

Rowlund, Poul B.: *See—*
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Roy, John R. Electromagnetic positioning system. 3,774,097, Cl. 318-563.000.

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Rucker, Dietrich: *See—*
Metzger, Carl; Rucker, Dietrich; and Eue, Ludwig, 3,773,780.

Rucker, Dietrich; Bossert, Friedrich; Meyer, Horst; and Vater, Wulf, to Bayer Aktiengesellschaft. Azido-aryl 1, 4-dihydropyridines in effecting coronary dilation. 3,773,956, Cl. 424-266.000.

Ruckert, Hans-Jurgen: *See—*
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Ruda, Raymond J., to Bagcraft Corporation of America. Method of making draw band closure bags. 3,772,968, Cl. 93-35.0ds.

Ruddick, Maurice, to Burnett & Rolfe Limited. Keg feeding conveyors. 3,773,163, Cl. 198-21.000.

Rudnev, Michael John. Manufacture of structural units. 3,773,600, Cl. 156-551.000.

Ruekberg, Herbert S., to Continental Can Company, Inc. Method for making plastic closure. 3,773,888, Cl. 264-296.000.

Ruggerone, Artemio P., to Shapoff, Lloyd M. Method of preserving cooked potatoes. 3,773,527, Cl. 426-106.000.

Ruppeneit, Konstantin Vladimirovich; Prigozhin, Evgeny Semenovich; Denisov, Vsevolod Nikolaevich; and Golubev, Alexandr Vasilievich. Ground strain gauge. 3,772,911, Cl. 73-88.00e.

Rupprecht, Hans S.; and Woodall, Jerry M., to International Business Machines Corporation. Preparation of semiconductor ternary compounds of controlled composition by predetermined cooling rates. 3,773,571, Cl. 148-172.000.

Ruprecht, Hermann; and Glunk, Josef, to Maschinenfabrik FAHR AG. Drum type mower. 3,772,865, Cl. 56-192.000.

Russell, Allen S.; and Knapp, Lester L., to Aluminum Company of America. Furnace structure. 3,773,643, Cl. 204-243.00r.

Russell, David B.: *See—*
Captain, Khushroo M.; Edwards, John H.; and Russell, David B., 3,773,597.
Foskett, Roger D.; and Russell, David B., 3,772,947.

Rutt, Truman C., to N L Industries, Inc. Method for forming electrodes and conductors. 3,772,748, Cl. 29-25.420.

Rutti, Willi: *See—*
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Rutz, Hans; and Gubler, Kurt, to Ciba-Geigy Corporation. Acaracidal compositions and methods comprising aliphatically substituted thiosulfinyl and sulfonyl-alkyl-2,4,5-trihalogeno imidazoles. 3,773,960, Cl. 424-273.000.

Saarima, William A.: *See—*
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Sainte-Beuve, Philippe, to U.S. Philips Corporation. Arrangement for digital encoding of colour television video signals. 3,773,971, Cl. 178-5.40r.

Saito, Akira; and Ikeda, Tetsusabulou, to Iwatsu Electric Co., Ltd. Apparatus for supply of electro-insulating sheet. 3,773,234, Cl. 226-94.000.

Saito, Masahiro: *See—*
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Saito, Shoji: *See—*
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Sakumoto, Hideki; and Namoto, Yoshiteru, to Matsushita Electric Industrial Co., Ltd. Operating mode switching device. 3,774,131, Cl. 335-189.000.

Sakura Refrigerating & Heating Engineering Co., Ltd.: *See—*
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Salsbury Laboratories: *See—*
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Salz, Richard; and Karp, Johann, to Dynamit Nobel Aktiengesellschaft. Apparatus for the production of flaring portions of hollow bodies. 3,773,456, Cl. 425-384.000.

Samiran, David; and Moore, Arthur H. Pogo stick with adjustable spring bias. 3,773,320, Cl. 272-57.00e.

Sample, Steven B.; Scheuer, Paul R.; Speheger, Stevan W.; and Cox, Karmen D., to Design and Manufacturing Corporation. Control circuit for appliances and the like. 3,774,056, Cl. 307-293.000.

Samtleben, Hans-Wolfgang: *See—*
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Sandau, Wolfgang: *See—*
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Sandberg, Sven Alfred. Device for facilitating of the operation of automatically operable platform walls or gates at dump vehicles. 3,773,385, Cl. 298-23.0md.

Sanders, Grady H., to Deering Milliken Research Corporation. Drafting system. 3,772,738, Cl. 19-265.000.

Sanderson, Anne: *See—*
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Sandoz Ltd.: *See—*
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Sandoz-Wander, Inc.: *See—*
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Sands, Lawrence. Rifle shooting stand. 3,772,813, Cl. 42-94.000.

Sands, Ronald L.; and Young, Don L., Jr., to McDonnell Douglas Corporation. Vehicle control system. 3,773,282, Cl. 244-83.00r.

Saner, Kaspar, to Wirth, Gallo & Co. Balance with temperature compensation. 3,773,125, Cl. 177-227.000.

Sargeant, Eugene F. Arrangement for aligning tubular sections for fabrication. 3,772,753, Cl. 29-200.00p.

Sarnes, Myron C.: *See—*
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Sarra, Salvatore S., to Kiekhaefer Aeromarine Motors, Inc. Flash removal. 3,772,946, Cl. 83-13.000.

Sasaki, Takashi: *See—*
Goyoh, Kazuo; Araki, Kunio; and Sasaki, Takashi, 3,773,638.

Sato, Kozo. Roller bearing. 3,773,398, Cl. 308-215.000.

Sato, Masamichi; Fukushima, Osamu; and Honjo, Satoru, to Fuji Photo Film Co., Ltd. Electrophotographic research development process employing a pre-toner. 3,773,507, Cl. 96-1.00r.

Sato, Shui; Nakajima, Tomio; Shono, Masayuki; and Korematsu, Shinobu, to Konishiroku Photo Industry Co., Ltd. Method of preparing light-sensitive photographic material with manganese dioxide layer. 3,773,539, Cl. 117-33.300.

Sauer, Hans-Jurgen: *See—*
Stosberg, Herbert; Reinhards, Gunter; Engels, Siegfried; and Sauer, Hans-Jurgen, 3,772,733.

Saunders, William T., to National Steel Corporation. Apparatus for linear measurement of sheets. 3,772,796, Cl. 33-147.00e.

Sayles, David C. Method of burning a combustible substance by contact with a combustion composition. 3,773,575, Cl. 149-22.000.

Scan Systems Incorporated: *See—*
Kyle, William F., Jr., 3,774,190.

Scarelli, David F. Heat responsive cable assembly. 3,774,184, Cl. 340-227.00c.

Schack, Carl J.; and Pilipovich, Donald, to Rockwell International Corporation. Synthesis of trifluoramine oxide and chlorodifluoramine. 3,773,901, Cl. 423-386.000.

Schaefer, Hans: *See—*
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Schafer, Karl; and Voelskow, Peter, to Siempelkamp, G., & Co. Method and apparatus for the comminution of wood. 3,773,267, Cl. 241-28.000.

Schaffer, Albert M., to National Cash Register Company, The. Non-volatile random access memory cell using an alterable threshold field effect write transistor. 3,774,177, Cl. 340-173.00r.

Schane, Alvin Mansfield, to American Can Company. Full or partial opening easy-open container end closure. 3,773,209, Cl. 220-54.000.

Schappell, Frederick G., to Hercules Incorporated. 1,3,3-Trimethyl-bis(alpha-t-butylperoxyisopropyl-1-phenylindane. 3,773,724, Cl. 260-46.50g.

Schering AG: *See—*
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Burba, Christian; Griebsch, Eugen; and Krieger, Bernhard, 3,773,595.

Scherle, Alexander Dieter: *See—*
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Scherle, Daniela Barbara: *See—*
Scherle, Dieter, 3,774,083.

Scherle, Dieter; deceased (by Scherle, Margaret; heir to one-half of his estate; Scherle, Ursula; Scherle, Daniela Barbara; and Scherle, Alexander Dieter; heirs to the remaining half of the estate), to Siemens Aktiengesellschaft. Apparatus for connecting a output device to a circuit to be monitored. 3,774,083, Cl. 317-157.000.

Scherle, Margaret: *See—*
Scherle, Dieter, 3,774,083.

Scherle, Ursula: *See—*
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Schertz, Arthur R. Combination sand bailer and fluid pump with automatic grit separator and lubricator. 3,773,441, Cl. 417-554.000.

Scheublein, James K.; and Swinney, Gary D., to Moog Industries, Inc. Vehicle suspension system. 3,773,346, Cl. 280-124.00r.

Scheuer, Paul R.: *See—*
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Scheutle, Erich: *See—*
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Schindler, Walter; deceased (by Gosteli, Jacques; and; and by Gysin, Leonhard; executors), to Ciba-Geigy Corporation. 1,2,3,8-Tetra hydrodibenzo(3,4:6,7)cyclohepta (1,2-c)pyrroles as CNS-depressants. 3,773,940, Cl. 424-274.000.

Schirmann, Jean-Pierre; and Weiss, Francis, to Ugine Kuhlmann. Process for the preparation of 1,2,6-hexanetriol. 3,773,842, Cl. 260-635.00a.

Schlaf, Stanley O. Dispensing machine for bagged products. 3,773,217, Cl. 221-75.000.

Schlagbauer, Johann; Maulhardt, Otto; and Schmitt, Werner, to Vereinigte Papierwerke Schickendana & Co. Process and apparatus for the removal of soft objects, especially cellulose tissues. 3,773,322, Cl. 271-80.000.

Schlesinger, Kurt, to General Electric Company. Image converter utilizing the combination of an electrostatic deflection field and a magnetic focusing field. 3,774,236, Cl. 315-11.000.

Schlumberger Technology Corporation: *See—*
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Schluter, James C.: *See—*
Schoulties, Allan P.; and Schluter, James C., 3,773,255.

Schmerling, Louis, to Universal Oil Products Company. Alkylation of saturated hydrocarbons. 3,773,843, Cl. 260-666.00p.

Schmid, John J., to United States of America, Army. Diglycidyl ether of 4-methylol resorcinol. 3,773,799, Cl. 260-348.00r.

Schmid, Markus: *See—*
Burkhardt, Max; Huber, Horst; Zeller, Josef K.; Chateau, Christian; and Schmid, Markus, 3,773,103.

Schmidt, Donald L.: *See—*
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Schmidt, Gordon F.: *See—*
Morgan, Everett V.; Haynes, Robert W.; and Schmidt, Gordon F., 3,773,220.

Schmidt, Karl-Julius; Hammann, Ingeborg; and Unterstenhofer, Gunther, to Bayer Aktiengesellschaft. Cinnolinyl(thiono)phosphoric(phosphonic) acid esters and ester amides. 3,773,766, Cl. 260-250.00a.

Schmidt, Warren H. D., to Fiberglas Canada Limited. Process for fibre drawing by fluid means. 3,773,483, Cl. 65-2.000.

Schmidt, Wilhelm: *See—*
Nees, Stephan Hubbertus Anton; and Schmidt, Wilhelm, 3,773,645.

Schmitt, Ernst: *See—*
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Schmitt, Werner: *See—*
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Schoulties, Allan P.; and Schluter, James C., to Armco Steel Corporation. Fluid collection assembly for railroad roadbed. 3,773,255, Cl. 238-2.000.
Schrader, David T., to General Electric Company. Difunctional and trifunctional polysiloxanes as additives to latex foam rubber. 3,773,685, Cl. 252-358.000.
Schrader, Gerhard; Hammann, Ingeborg; and Homeyer, Bernhard, to Bayer Aktiengesellschaft. Amidothionophosphoric acid phenyl esters. 3,773,859, Cl. 260-941.000.
Schrage, Albert; and Readio, Philip D., to Dart Industries Inc. Modified polyolefin compositions having controlled melt flow. 3,773,855, Cl. 260-827.000.
Schreibeis, John J., to Cutler-Hammer, Inc. Motorized damper operator and control. 3,773,028, Cl. 126-285.00b.
Schrenk, Walter J., to Dow Chemical Company, The. Method for multilayer coextrusion. 3,773,882, Cl. 264-171.000.
Schroder, Eberhard: *See—*
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Schroeder, Peter, to Weber, Paul, AG. Apparatus for continuous wet treatment of a textile web. 3,772,903, Cl. 68-62.000.
Schrudde, Reinhold, to Kochs Adler AG. Lubricating device for lockstitch sewing machine loopers. 3,773,020, Cl. 112-256.000.
Schuller, James J., to Pullman Incorporated. Motor operated hooper door mechanism actuates latch. 3,772,996, Cl. 105-240.000.
Schuller, James J., to Pullman Incorporated. Discharge door operating mechanism. 3,773,194, Cl. 214-63.000.
Schulte, Thomas L.: *See—*
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Huber, Wolfgang; and Schulte, Thomas L., 3,773,929.
Schulthess, Peter U.; and Wild, Peter, to Aktiengesellschaft Brown, Boveri & Cie. Liquid crystal display device. 3,774,195, Cl. 340-324.00r.
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Schulz, Hans-Georg: *See—*
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Schulze, Henry G.; Williams, Herschel C.; Bown, Delos E.; and Neureiter, Norman P., to Esso Research and Engineering Company. Alkylene-bridged esters. 3,773,812, Cl. 260-779.00s.
Schulze, Martin: *See—*
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Schundehutte, Karl-Heinz, to Bayer Aktiengesellschaft. Aminonaphthalene-sulphonic acids. 3,773,827, Cl. 260-508.000.
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Schuttloffel, Erich, to Licentia Patent-Verwaltungs-G.m.b.H. Process for the application of fittings to waveguides. 3,772,771, Cl. 29-600.000.
Schwarzer, Franz: *See—*
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Schwarzkopf, Hans, GmbH: *See—*
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Scott, Hubert D.; and Smith, Michael P., to Texaco Inc. Dual spaces epithermal neutron detector porosity logging. 3,774,033, Cl. 250-266.000.
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Scott, Paul B.: *See—*
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Scott, William Michael, to Canadian National Railway Company. Peak horsepower meter. 3,774,111, Cl. 324-140.00r.
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Sealby, Robert L.; and Bate, Ralph G. Whirlpool bath for limb extremities. 3,772,714, Cl. 4-179.000.
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Gerhart, James M., 3,774,036.
Weier, Richard M., 3,773,758.
Secter, Michael. Solid-geometrical puzzle and furniture arrangements. 3,773,329, Cl. 273-153.00r.
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Seeger, Richard E., Jr.; and Coulter, John G., to Chomerics, Inc. Pedestal and spring member for key actuator of diaphragm switch. 3,773,998, Cl. 200-159.00b.
Seglin, Thomas P. Concealed pocket. 3,772,708, Cl. 2-253.000.
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Sholk, Semen Fedorovich; Svidler, Jury Ruvimovich; Seleznev, Viktor Petrovich; and Komova, Zinaida Petrovna, 3,773,030.
Selgin, Paul J., to Neotec Corporation. Device for color measurement of liquids in continuous flow. 3,773,424, Cl. 356-181.000.
Selin, Terry G.: *See—*
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Sell, Abdul Harry, to Darf Corporation. Apparatus for harvesting grapes. 3,772,866, Cl. 56-330.000.
Senften, David A., to Hunter Engineering Company. Balancing apparatus for rotating bodies and method of producing frequency stable phase delay. 3,772,919, Cl. 73-457.000.
Senolt, Hans; Tomaschko, Heinrich; and Palvik, Georg, to Osterreichische Mineralolverwaltung Aktiengesellschaft. Bitumen blasting process and blast reactor therefor. 3,773,649, Cl. 208-6.000.
Seron Mfg. Co.: *See—*
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Seron, Suren M., to Seron Mfg. Co. Lanyard construction. 3,772,740, Cl. 24-73.00r.
Seze, Koichi, 1/2 to Daiwa Seiko Co., Ltd. Apparatus for practicing timing for sports to be used mainly for golf. 3,772,800, Cl. 35-29.00a.
Shanks, Douglas G.; Seed, Richard E.; and Holmes, Arthur J. Utility device. 3,773,118, Cl. 173-43.000.
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Yaplee, Benjamin S.; and Shapiro, Allan, 3,774,207.
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Sharpe, Raymond; and Hunt, Peter, to Rotex Limited. Fluid cooled dynamo electric machine. 3,774,060, Cl. 310-61.000.
Shaw, Milton C. Grinding wheel. 3,772,831, Cl. 51-206.00r.
Sheehan, Walter A.: *See—*
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Sheller-Globe Corporation: *See—*
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Shellstad, Richard J. Car washing apparatus. 3,772,725, Cl. 15-21.00d.
Shen, Tsung-Ying; Walford, Gordon L.; and Witzel, Bruce E., to Merck & Co., Inc. Method of treating inflammation with substituted anilino salicylic acids. 3,773,936, Cl. 424-230.000.
Shepherd, Lawrence H., Jr., to Ethyl Corporation. Synthesis of cyclic aluminum compounds. 3,773,714, Cl. 260-448.00a.
Shepherd Machinery Co.: *See—*
Shepherd, Willard W., 3,773,196.
Shepherd, Willard W., to Shepherd Machinery Co. Bottom dumping bucket. 3,773,196, Cl. 214-146.00r.
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Sheridan, Francis R. Reciprocating in-line magnetic actuator. 3,773,439, Cl. 417-415.000.
Sheth, Prabhakar, Ranchhordas; and Stiel, Donald Melvin, to Hoffman-La Roche, Inc. Therapeutic compositions. 3,773,921, Cl. 424-19.000.
Shibamoto, Iwao. Safety device. 3,773,350, Cl. 280-150.0ab.

Shibano, Yoshizo; Hatano, Tetsuo; Omkura, Toshikiko; and Yamashita, Shohachiro, to Sumitomo Electric Industries Ltd. Radome. 3,774,224, Cl. 343-872.000.

Shibasaki, Yasuichi; and Oyama, Koichi, to Nippon Peroxide Co., Ltd. Composition for etching copper with reduced sideways-etching. 3,773,577, Cl. 156-8.000.

Shidlovsky, Isal, to RCA Corporation. Cathodochromic image screen and method for preparing cathodochromic sodalite for said image screen. 3,773,540, Cl. 117-33.50c.

Shields, Theodore Curtis: *See—*
Papa, Anthony Joseph; Proops, William Robert; and Shields, Theodore Curtis, 3,773,696.

Shils, Lee H.: *See—*
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Shimomura, Jun, to Nippon Kogaku K.K. Single-lens reflex camera with an automatic aperture control device. 3,772,974, Cl. 95-10.0cd.

Shimosaka, Yukio; and Uno, Yoshihiro, to American Cyanamid Company. Process for fibers containing uniform distribution of insoluble solid additives therein. 3,773,884, Cl. 264-182.000.

Shin Cosmos Denki Kabushiki Kaisha: *See—*
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Shindo, Yoshio: *See—*
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Sholk, Semen Fedorovich; Svidler, Jury Ruvimovich; Seleznev, Viktor Petrovich; and Komova, Zinaida Petrovna. Apparatus for continuous melting loose products. 3,773,030, Cl. 126-343.50a.

Shono, Masayuki: *See—*
Sato, Shui; Nakajima, Tomio; Shono, Masayuki; and Korematsu, Shinobu, 3,773,539.

Shore, James B., to Schlumberger Technology Corporation. Perforating apparatus. 3,773,119, Cl. 175-4.600.

Shouvlin, Joseph C.; and Leask, Raymond A., to Bauer Bros. Co., The. Pressurized system for pulp refining including pressurized double disk treatment. 3,773,610, Cl. 162-19.000.

Shults, Mikhail Mikhailovich: *See—*
Nikolsky, Boris Petrovich; Shults, Mikhail Mikhailovich; Pisarevsky, Alexandr Moiseevich; Beljustin, Anatoly Alexandrovich; Bolkhontseva, Sofia Konstantinovna; Dolidze, Vladimir Alexandrovich; Tarasova, Valentina Mikhailovna; Karachentseva, Julia Mikhailova; and Dolmazova, Liana Iosifovna, 3,773,642.

Sibley, Henry C.: *See—*
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Siciliano, George R., to General Electric Company. Equilibration of cyanoalkyl polysiloxanes. 3,773,818, Cl. 260-448.20e.

Siddall, John B.; and Calame, Jean Pierre. 11-Halo-3,7,11-trialkyl-2-alkenoic and 2,6-alkadienoic acid amides. 3,773,805, Cl. 260-404.000.

Sidhu, Mohanjit S.; and Landis, Donald E., to National Cash Register Company, The. Eccentric drive mechanism. 3,772,926, Cl. 74-116.000.

Siebert, William R., to Giddings & Lewis, Inc. Hydrostatic rotary table. 3,772,961, Cl. 90-58.00b.

Sieckmann, Werner; Jurging, Klaus; and Zwach, Jan, to Hoesch Aktiengesellschaft. Method of enameling strips and sheets of steel. 3,773,629, Cl. 204-38.00c.

Siedman, Jack, to Spot-O-Gold Corporation. Hidden indicia game board and associated toy sheet with similar indicia. 3,773,328, Cl. 273-139.000.

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Siltari, Arvo Ilmari, to Osakeyhtio, A. Ahlstrom. Method and mechanism for mounting saw blades in a circle saw. 3,772,761, Cl. 29-406.000.

Silverman, Daniel. Random access multiple disc optical information storage system. 3,774,172, Cl. 340-173.0lm.

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Simon, Horst; and Bethmann, Heinz G., to Eastman Kodak Company. Flash and shutter synchronizing mechanism. 3,772,973, Cl. 95-11.50r.

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Slykhouse, Thomas E., to Dow Chemical Company, The. Explosive composition containing monocellular thermoplastic globules and method of preparing same. 3,773,573, Cl. 149-21.000.

Slysh, Paul, to General Dynamics Corporation. Reciprocating thermal engine. 3,772,876, Cl. 60-529.000.

Small, Bernard J. Apparatus and process for forming tubular bodies. 3,772,752, Cl. 29-157.00r.

Smeal, Thomas W., to United States Steel Corporation. Epoxy adhesive composition. 3,773,703, Cl. 260-33.6ep.

Smilgys, Bruno S., to Veeder Industries, Inc. Multiple-key lock mechanism. 3,774,227, Cl. 346-54.000.

Smirl, Richard L., to Borg-Warner Corporation. Rotor for clutch or brake. 3,773,153, Cl. 188-218.0xl.

Smith, A. O., Corporation: *See—*
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Smith, Albert L., to Armstrong Cork Company. Installation tool. 3,772,758, Cl. 29-235.000.

Smith, Frederick Arthur, to Imperial Chemical Industries Limited. Selector valve for receiving and distributing plural flows. 3,773,076, Cl. 137-625.190.

Smith, Hubert E.; Rasquin, John R.; and Taylor, Roy A., to United States of America, National Aeronautics and Space Administration. Digital computing cardiotachometer. 3,773,038, Cl. 128-2.06f.

Smith International, Inc.: *See—*
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Smith, Joseph H. Method of manufacturing contact lenses. 3,772,832, Cl. 51-284.000.

Smith, Kenneth F. Data storage and color analysis systems. 3,774,169, Cl. 340-173.0lt.

Smith, Michael P.: *See—*
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Smith, Richard C.; and Bechtold, William M., to National Cash Register Company, The. Merchandise mark sensing system. 3,774,205, Cl. 343-6.5ss.

Smith, William W., to FMC Corporation. Olive stuffing machine. 3,772,982, Cl. 99-494.000.

Smithkline Corporation: *See—*
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Blackburn, Dale W.; Devenney, Robert F.; and Mlynarski, John J., 3,773,761.
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Smolka, Thomas Gordon; and Schweizer, Gottfried, to Gertsch AG. Ski boot. 3,772,802, Cl. 36-2.5al.

Snam Progetti S.p.A.: *See—*
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Maspero, Federico; and Perrotti, Emilio, 3,773,814.
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Neri, Carlo; and Perrotti, Emilio, 3,773,798.
Rossi, Enzo; Giusti, Guido; and Imparato, Luigi, 3,773,815.
Sneider, Vincent R. Disposable syringe. 3,773,047, Cl. 128-232.000.
Snellman, Donald L.; Davis, Ernest D.; and Johnson, Dale R., to Norfin, Inc. Programmed sheet distributing device. 3,772,970, Cl. 93-93.00c.
Snyder, Charles H.: *See—*
Hankey, Robert E.; Arrizabalaga, Martin J.; Olejkowski, Edwin; Pouch, Cyrillo; and Snyder, Charles H., 3,772,773.
Sobel, Leonard H.: *See—*
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Societa Italiana Resine S.p.A.: *See—*
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Societe Anonyme D.B.A.: *See—*
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Societe d'Etudes Recherches et Constructions Electronique Sercel: *See—*
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Societe Francaise de Developpement et de Recherche Sofrader: *See—*
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Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
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Societe Lanniionnaise d'Electronique: *See—*
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Soderlund, Vernon R. Perforating continuous pavement cutter. 3,773,386, Cl. 299-36.000.
Sofia, Robert D.: *See—*
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Soiltest, Inc., mesne: *See—*
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Sorensen, Irvin; and Rowe, William D., to Quintex Corporation. Portable card punch. 3,772,950, Cl. 83-143.000.
Sorm, Frantisek: *See—*
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Southern, Jack: *See—*
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Southwest Forest Industries, Inc.: *See—*
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Southwest Research Institute: *See—*
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Southwire Company: *See—*
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Souza, Augustine A., to Phoenix Closures, Inc. Self-closing dispenser. 3,773,233, Cl. 222-490.000.
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Spaak, Albert; and Weir, Clifford L., to Allied Chemical Corporation. Method of injection molding foamable plastic with minimized wastage. 3,773,873, Cl. 264-37.000.
Spademan, Charles F.: *See—*
Marsalka, Joseph P.; and Spademan, Charles F., 3,774,156.
Spangler, Carl David, Jr. Antipollution disposal of sour refinery gas with sulfur recovery. 3,773,912, Cl. 723-574.000.
Sparling, Arthur J. Welding of wires to each other. 3,773,262, Cl. 239-291.000.
Spearhead, Inc.: *See—*
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Spector, Samuel. Toilet with disposable receptacle. 3,772,711, Cl. 4-78.000.
Speheger, Stevan W.: *See—*
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Spisak, Steve, to TRW Inc. Chucking means for large flanged studs when automatically feeding studs thru rear of chuck. 3,774,005, Cl. 219-98.000.
Spoor, Herbert; and Demmler, Kurt, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of coatings by curing with ionizing radiation. 3,773,547, Cl. 117-93.310.
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Ross, Sidney D.; and Finkelstein, Manuel, 3,774,090.
Sprague, James W.; and Valus, Ronald J., to Standard Oil Company, The. Process for producing benzyl ketones. 3,773,837, Cl. 260-590.000.
Sprecher & Schuh AG: *See—*
Amsler, Joachim, 3,773,993.
Spreitzhofer, Ernst, to Bodenseewerk Perkin-Elmer & Co., GmbH. Multi-range signal integrator which changes range only at specific times. 3,774,018, Cl. 235-183.000.
Sprinzak, Yair, to Yeda Research and Development Co., Ltd. Esters of α-hydroperoxy-bis-p-halo-phenylacetic acids. 3,773,811, Cl. 260-469.000.
Squibb, E. R., & Sons, Inc.: *See—*
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Stacey, Alan J.; and Dotson, Ronald L., to Diamond Shamrock Corporation. Control of an olyte-catholyte concentrations in membrane cells. 3,773,634, Cl. 204-98.000.
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Staffin, Robert: *See—*
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Stahle, Helmut; Kummer, Werner; Koppe, Herbert; and Samtleben, Hans-Wolfgang, to Boehringer Ingelheim G.m.b.H. N-(hydroxy- or methoxy-alkyl)-2-[N'-(hydroxy or methoxy-alkyl)-phenylamino]-imidazolines-(2) and salts thereof. 3,773,767, Cl. 260-254.000.
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Koch, Heinrich; and Staneck, Heinz, 3,773,599.
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Stark, Martin H. Method of shortening a window shade roller. 3,772,762, Cl. 29-426.000.
Starr, Kenneth Arnold; and Bierdemann, George Haenl, to Fabrinetics, Ltd. Process for forming simulated marble. 3,773,886, Cl. 264-245.000.
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Stein, Karl-Ulrich; and Sihling, Aarne, to Siemens Aktiengesellschaft. Semiconductor memory having single transistor storage elements and a flip-flop circuit for the evaluation and regeneration of information. 3,774,176, Cl. 340-173.00r.

Steinemann, Samuel; and Peter, Martin, to Institut Dr. Ing. Reinhard Strumann A.G. Construction element having strongly negative temperature coefficients of elasticity moduli. 3,773,570, Cl. 148-32.500.

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Steinstrasser, Ralf, to Merck Patent Gesellschaft mit beschrankter Haftung. Substituted azoxy benzene compounds. 3,773,747, Cl. 260-143.000.

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Stempel, Arthur; and Sternbach, Leo Henryk, to Hoffmann-La Roche Inc. 2-Aminoxy-2'-acyl-acetanilide. 3,773,719, Cl. 260-471.00a.

Stendel, Wilhelm: *See*—
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Stephanos, Stephen P., to Lauer, George E. Photoelectric system for grading objects according to size. 3,774,040, Cl. 250-560.000.

Stephens, Richard J. Apparatus for securing a plurality of cards in a holder. 3,772,754, Cl. 29-200.00b.

Stephens, William K., Jr., to Morris, Philip, Incorporated. Cigarette with controlled smoking profile. 3,773,053, Cl. 131-9.000.

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Sternberger, Ludwig A.; Cuclis, John J.; and Meyer, Howard G., to United States of America, Army. Soluble antigen-antibody complexes. 3,773,625, Cl. 195-99.000.

Sterns, Robert B.; and McGuire, Richard, to Sun Chemical Corporation, mesne. Control of process according to registration indicia on material being processed. 3,774,016, Cl. 235-151.100.

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Stimpel, Thomas. Electrostatic processor for ores. 3,773,174, Cl. 209-131.000.

Stockdill, Robert G. Track mounted cover for pickup type truck. 3,773,380, Cl. 296-137.00b.

Stoffel, Robert W. Seat belt buckle. 3,772,744, Cl. 24-230.00a.

Stolfa, Frank, to Universal Oil Products Company. Hydrogenative thermal cracking. 3,773,655, Cl. 208-107.000.

Stolzer, Claus; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. 5-6(-Alkoxycarbonybenzyl)-dithiophosphoric acid ester amides. 3,773,887, Cl. 260-941.000.

Stone, Edward: *See*—
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Stone, Herman: *See*—
Largman, Theodore; Stone, Herman; and Koch, Paul J., 3,773,715.

Stoner, Elizabeth J. Eye glasses. 3,773,407, Cl. 351-41.000.

Story, Thomas A.; and Cadou, Peter B., to General Motors Corporation. Track roller assembly. 3,773,393, Cl. 305-14.000.

Stosberg, Herbert; Reinhards, Gunter; Engels, Siegfried; and Sauer, Hans-Jurgen, to Firm Tente-Rollen Gesellschaft mit beschrankter Huftung Compagnie. Castors, particularly in the form of swivel castors. 3,772,733, Cl. 16-35.000.

Strauts, Eric J.: *See*—
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Strazik, William F.: *See*—
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Streck, Clement, to GAF Corporation. Acid and direct dyes and fluorescent brightener concentrates with thiocyanates and acetylinic alcohol. 3,773,464, Cl. 8-93.000.

Stroke, George Wilhelm. Storage and reconstitution of microphotographic images. 3,772,976, Cl. 95-36.000.

Strom, John A.: *See*—
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Strong, Jerry G., to Mobil Oil Corporation. 3-(4-Methyl-3-cyclohexenyl)-butyl esters of organic acids. 3,773,824, Cl. 260-484.00r.

Stroud, Ray D. Container and safety lid therefor. 3,773,204, Cl. 215-9.000.

Stroud, Stanley G.; and Estes, James D., to N L Industries, Inc. Selective firing indicator and recorder. 3,773,120, Cl. 175-4.550.

Struttmann, Hilarius S., to Borg-Warner Corporation. Self-aligning bearing assembly. 3,773,397, Cl. 308-194.000.

Struwe, Herbert: *See*—
Kroll, Gunter; Struwe, Herbert; and Fliess, Gunther, 3,773,972.

Stucki, A., Company: *See*—
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Stungis, George E.; and Merker, Steve L., to Brown & Williamson Tobacco Corporation. Microwave treatment of cigarettes on a making machine. 3,773,055, Cl. 131-140.00p.

Sturm, Rolland G., to Sturm Stress, Inc. Reaction damper for overhead electrical transmission lines. 3,773,967, Cl. 174-42.000.

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Suffner, Willi. Drive mechanism for the yarn guide means of a loom. 3,772,924, Cl. 74-81.000.

Sugano, Shigeaki, to Minolta Camera Kabushiki Kaisha. Device for displacing photographic lens. 3,773,405, Cl. 350-252.000.

Sugio, Akitoshi: *See*—
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Sugiyama, Sigeru, to Tokyo Shibaura Electric Company, Ltd. No-fuse circuit breaker. 3,774,129, Cl. 335-167.000.

Sulcek, Charles E., to Whirlpool Corporation. Front panel construction for refuse compactor drawer. 3,773,399, Cl. 312-204.000.

Sullivan, James D., to Monsanto Company. Triaryl phosphates. 3,773,864, Cl. 260-966.000.

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Suman, George O., Jr., to Shell Oil Company. Jet Pump supercharging of oil field plunger pump. 3,773,437, Cl. 417-87.000.

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Suzoki, Takeshi: *See*—
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Svanfors, Soren Baltsar Egon. Arrangement at injection moulding machine for rendering possible multi-component moulding. 3,773,450, Cl. 425-130.000.

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Swan-Gett, Clifford S.; Despain, Richard R.; and Jacobsen, Stephen C. Tooth isolating shield. 3,772,790, Cl. 32-34.000.
Swanson, Alfred B. Prosthetic joint. 3,772,709, Cl. 3-1.000.
Swart, Louis Maarten, to U.S. Philips Corporation. Deflection coil system, in particular for a camera tube. 3,774,070, Cl. 315-27.0xy.
Swartz, Clarence J. Bicycle passenger foot support. 3,773,355, Cl. 280-291.000.
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Taga, Jun. Apparatus for molding thermoplastic materials. 3,773,452, Cl. 425-220.000.
Taguchi, Seiichi; Tezuka, Sigeru; Tomotsu, Takeshi; and Mizuki, Eiichi, to Fuji Photo Film Co., Ltd. Means for mounting a dye-transfer matrix to a plate cylinder. 3,772,991, Cl. 101-415.100.
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Tamura, Takaaki; Minato, Hideo; Iahiko, Toshimasa; and Shindo, Yoshio. Process for the separation or concentration of gaseous mixture. 3,772,852, Cl. 55-32.000.
Tamura, Zensuke; Hishinuma, Yukio; and Arashi, Norio, to Hitachi, Ltd. Exhaust gas desulfurizing method and apparatus. 3,772,854, Cl. 55-73.000.
Tanabe, Kouzi: *See—*
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Tellier, Andre. Candle with optical lens insert. 3,773,460, Cl. 431-289.000.
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Thirkell, Harry. Removal of acidic gases from gaseous mixtures. 3,773,895, Cl. 423-223.000.
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Timbers, Lawrence J. Wedge through type closure for dock door. 3,772,839, Cl. 52-173.000.
Timbers, William R. Quick disconnect coupling. 3,773,360, Cl. 285-307.000.
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Tomalia, Donald A.; and Schmidt, Donald L., to Dow Chemical Company, The. Inhibiting degradation and corrosion of solid substrates by application thereto of a curable coating of a polyepoxide and an oxazine or oxazoline. 3,773,550, Cl. 117-132.00b.
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Tremblay, Hubert J., to Communication Systems Corporation. Telephone line test isolation apparatus. 3,773,986, Cl. 179-175.300.
Tricoli, Antonio; Battarra, Alberto; Rebua, Giovanni; and Bestetti, Luigi, to Montecatini Edison S.p.A. Electrolytic cell for the production of fluorine. 3,773,644, Cl. 204-252.000.
Trieschmann, Hans-Georg; Urban, Friedrich; Schweier, Guenther; and Kohnle, Josef, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Catalyst system for the polymerization of olefins. 3,773,688, Cl. 252-429.00c.
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Tsen, Oho C.; and Hoover, William J., to Kansas State University Research Foundation. Shortening sparing process for wheat flour based baked or fried dough products and doughs produced thereby. 3,773,521, Cl. 426-343.000.
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Whittaker Corporation: *See—*
Johnson, Robert E., 3,772,938.
Wicker, George Leonard, to Turner Brothers Asbestos Company Limited. Thermoplastic moulding compositions reinforced with a mixture of glass and asbestos fibers. 3,773,705, Cl. 260-37.00n.
Widell, Charles D.: *See—*
Martin, William R.; and Widell, Charles D., 3,774,220.
Wiebe, Donald. Truck dampening. 3,773,147, Cl. 188-33.000.
Wiegand, John R.; and Velinsky, Milton. Ferromagnetic storage medium. 3,774,179, Cl. 340-174.0zb.
Wiegand, John R.; and Velinsky, Milton. Ferromagnetic memory readout device. 3,774,180, Cl. 340-174.0sr.
Wiehe, John F., Jr.: *See—*
Bonner, Robert B.; and Wiehe, John F., Jr., 3,774,217.
Wier, Bert. Apparatus for prevention of recurrence of prolapsed uterus. 3,773,042, Cl. 128-130.000.
Wiest, Hubert: *See—*
Bergmeister, Eduard; Lieb, Erwin; and Wiest, Hubert, 3,773,699.
Wigg, Eric E.: *See—*
Bernstein, Leonard S.; Raman, Ananiha K. S.; and Wigg, Eric E., 3,773,894.
Wild, Peter: *See—*
Schulthess, Peter U.; and Wild, Peter, 3,774,195.
Wildi, Edwin, to Maschinenfabrik Benninger AG. Warp creel. 3,773,274, Cl. 242-131.100.
Wilkes, Donald F., to Rolamite, Incorporated. Ski bindings. 3,773,344, Cl. 280-11.35t.
Wilks, Robin John: *See—*
Mallard, John Rowland; and Wilks, Robin John, 3,774,031.
Willcox, Dale F.: *See—*
Krieger, Irving W.; Peluchiwski, John J.; and Willcox, Dale F., 3,773,991.
William, Laurence Lyman; and Coscia, Anthony Thomas, to American Cyanamid Company. Water soluble cationic thermosetting poly(N-carbamoyl)polyalkylenepolyamine resins and wet strength paper containing the same. 3,773,736, Cl. 260-68.000.
Williams, Harrison L., to Preformed Line Products Company. Cable indicating, flotation and vibration damping devices. 3,772,718, Cl. 9-8.00r.
Williams, Herschel C.: *See—*
Schulze, Henry G.; Williams, Herschel C.; Bown, Delos E.; and Neureiter, Norman P., 3,773,812.
Williams, Neville Ronald; and Lloyd, Henry, to United Kingdom Atomic Energy Authority. Nuclear fuel. 3,773,867, Cl. 264-.500.
Wilson & Chandler, mesne: *See—*
Wilson, Harold W., 3,773,910.
Wilson, Clenis E.: *See—*
Chance, Glenn G.; Crews, Sam T.; and Wilson, Clenis E., 3,773,359.
Wilson, Earl E. Compact wrap-around car wash brush apparatus. 3,772,724, Cl. 15-21.00d.
Wilson, Harold W., to Wilson & Chandler, mesne. Preparation of solid composition of matter containing large percentages of sulfuric acid. 3,773,910, Cl. 423-530.000.
Wilson Pharmaceutical & Chemical Corporation: *See—*
Yang, Shih-Tzy; Egozi, Sunny Edmund; and Yanari, Sam S., 3,773,467.
Wilson, Robert W., to Powell Manufacturing Company, Inc. Apparatus for removing tobacco leaves from rows of tobacco plants and for handling the removed leaves. 3,772,862, Cl. 56-27.500.
Wilson, Thomas C., Inc., mesne: *See—*
Dussel, Paul E., 3,773,117.
Wiltron Company: *See—*
Dunwoodie, Duane E., 3,774,107.
Wiman, Robert Edgar: *See—*
Hillsdale, Sidney Cohen; and Wiman, Robert Edgar, 3,773,463.
Winchcombe, Plier David: *See—*

Newton, Dennis Sydney; and Winchcombe, Plier David, 3,773,544.
Windham, Robert L. Sewage back-up sensor assembly. 3,774,187, Cl. 340-243.000.
Windish, Thomas J.: *See—*
Klebe, Johann F.; and Windish, Thomas J., 3,773,718.
Wine, Charles Martin: *See—*
Marlowe, Frank Jerome; and Wine, Charles Martin, 3,774,116.
Wing, Milton S.: *See—*
Tischler, Larry G.; and Wing, Milton S., 3,773,850.
Winkler, Rudolf, to Sandoz Ltd. Process for the production of 1,5-dihydroxyanthraquinone. 3,773,800, Cl. 260-383.000.
Winslow, James C. Seed dispensing wheel. 3,773,224, Cl. 222-139.000.
Winzer, Gerhard: *See—*
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Wirth, Gallo & Co.: *See—*
Saner, Kaspar, 3,773,125.
Wirz, Roswitha: *See—*
Groebke, Wolfgang; and Wirz, Roswitha, 3,773,750.
Wisconsin Alumni Research Foundation: *See—*
Sih, Charles J., 3,773,622.
Witt, Ronald L., to Woodward Governor Company. Load equalizing control for multiple unit power plants. 3,772,884, Cl. 60-97.00r.
Witzel, Bruce E.: *See—*
Shen, Tsung-Ying; Walford, Gordon L.; and Witzel, Bruce E., 3,773,936.
Wolff, Ulrich: *See—*
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Wolk, Ronald H.: *See—*
Nongbri, Govanon; Alpert, Seymour B.; and Wolk, Ronald H., 3,773,653.
Wollach, William W.; trustees of the: *See—*
Merrill, Edward W., 3,773,871.
Wollweber, Hartmund: *See—*
Hiltmann, Rudolf; Wollweber, Hartmund; Hoffmeister, Friedrich; and Kroneberg, Hans-Gunther, 3,773,771.
Wong, Robert; Flautt, Martin C.; and Haines, Richard M., to Owens-Corning Fiberglas Corporation. Sizing composition and glass fibers sized therewith. 3,772,870, Cl. 57-140.00g.
Woodall, Jerry M.: *See—*
Rupprecht, Hans S.; and Woodall, Jerry M., 3,773,571.
Wooden, John A., to Brookside Corporation. Flexible blade fan. 3,773,435, Cl. 416-132.000.
Woodland, Daniel, Inc.: *See—*
Roveti, Denes, 3,774,110.
Woods, Ritchey Paul, Jr.: *See—*
Cox, Elmer Adrain; Tiner, Wayne Douglas; and Woods, Ritchey Paul, Jr., 3,772,835.
Woodward Governor Company: *See—*
Witt, Ronald L., 3,772,884.
Worcester, Ben C., Jr.; and Watson, Doma A., to Johnson & Johnson. Preformed cross-laid fabric. 3,773,606, Cl. 161-82.000.
Workman, Michall K.: *See—*
Aronoff, Michael S.; and Workman, Michall K., 3,773,035.
Worster, Hans E.; and Pudek, Marian F., to MacMillan Bloedel, Limited. Two-stage sodium-oxygen pulping. 3,773,611, Cl. 162-25.000.
Worth, Edward L.: *See—*
Blackwood, William R.; Germeshausen, Kenneth J.; and Worth, Edward L., 3,774,229.
Worwag, Eberhard, to Progress-Elektrogerate Mauz & Pfeiffer. Sweeping machine. 3,772,727, Cl. 15-49.00c.
Wright, Gerald D.; and Arendt, John P., to Kelco Company. Process for production of alginates. 3,773,753, Cl. 260-209.600.
Wright, James F., to Stucki, A., Company. Railway bogie spring group snubber assembly. 3,772,995, Cl. 105-197.0db.
Wright, Kenneth O. Method of teaching use of drinking straw. 3,773,256, Cl. 239-1.000.
Wright, Norbert L.: *See—*
Mahajan, Gautman K.; Wright, Norbert L.; and Schnell, Albert C., 3,773,140.
Wright, Theron E., to Raven Industries, Inc. Heavy load litung balloon. 3,773,279, Cl. 244-31.000.
Wu, Shu Y.: *See—*
Francombe, Maurice H.; Wu, Shu Y.; and Takei, William J., 3,774,174.
Wurlitzer Company, The: *See—*
Mead, Ralph T., 3,773,557.
Wyeth, William Albert: *See—*
Meservey, William Albert; Wyeth, William Albert; and Young, Alexander Irwin, 3,774,092.
Xerox Corporation: *See—*
MacClaren, Robert H., 3,773,513.
Stemmle, Denis J., 3,773,316.
Xonics, Inc.: *See—*
Muntz, Eric P.; Proudian, Andrew P.; and Scott, Paul B., 3,774,029.
Yabu, Toshiomi: *See—*
Nagahiro, Michinori; Yabu, Toshiomi; Hosono, Hiroo; and Ushihara, Masaharu, 3,773,277.
Yamada, Katsumi: *See—*
Ishida, Takashi; Yamada, Katsumi; and Hasegawa, Shigeki, 3,772,778.
Yamaguchi, Takeshi: *See—*
Yoshimura, Shohei; Matsui, Takeshi; and Yamaguchi, Takeshi, 3,773,608.
Yamaka, Eiso; and Ueda, Ichiro, to Matsushita Electric Industrial Company, Limited. Lead titanate pyroelectric infra-red intensity detector. 3,773,564, Cl. 136-213.000.
Yamamoto, Fumihiko: *See—*
Kawakami, Hajime; and Yamamoto, Fumihiko, 3,772,867.
Yamamoto, Hisao: *See—*
Nakao, Masaru; Katayama, Shigenari; and Yamamoto, Hisao, 3,773,762.
Yamamoto, Yoshio, to Research Engineering & Manufacturing, Inc., mesne. Method for making a thread forming member. 3,772,720, Cl. 10-10.00r.
Yamashita, Hiroshi; and Sekikawa, Nobuyoshi, to Fuji Photo Film Co., Ltd. Light-sensitive material containing a polyhalogenated hydrocarbon, an N-vinylcarbazole, and a fur-furylidene compound as an image enhancer and stabilizer. 3,773,515, Cl. 96-90.00r.
Yamashita, Shohachiro: *See—*
Shibano, Yoshizo; Hatano, Tetsuo; Omkura, Toshikiko; and Yamashita, Shohachiro, 3,774,224.
Yamato, Kazunari: *See—*
Kanazawa, Shogo; Saito, Shoji; Nakashima, Akira; Yamato, Kazunari; Okamoto, Kentaro; Kanaya, Ken; and Tanabe, Kouzi, 3,773,500.
Yamauchi, Noriyoshi; Ishino, Ken; and Yokoyama, Isao, to Nippon Toki Kabushiki Kaisha and F.D.K. Electronic Corporation. Vessel for use in heating food in a microwave oven. 3,773,669, Cl. 252-62.580.
Yamawaki, Shunro: *See—*
Irie, Yoshihiko; Yamawaki, Shunro; and Ohyama, Isao, 3,773,219.
Yanari, Sam S.: *See—*
Yang, Shih-Tzy; Egozi, Sunny Edmund; and Yanari, Sam S., 3,773,467.
Yancey, John W.: *See—*
Fidler, Carl E.; and Yancey, John W., 3,773,338.
Yang, Eugene Li-Chun, to Viewlex Inc. Non-regular five blade shutter. 3,773,412, Cl. 352-219.000.
Yang, Shih-Tzy; Egozi, Sunny Edmund; and Yanari, Sam S., to Wilson Pharmaceutical & Chemical Corporation. Microassay diagnostic test method. 3,773,467, Cl. 23-230.00b.
Yano, Tadashi: *See—*
Toshida, Shunichi; Kuroki, Tadashi; Someya, Nobutaka; Yano, Tadashi; and Ozora, Takashi, 3,773,149.
Yaplee, Benjamin S.; and Shapiro, Allan, to United States of America, Navy. Nadir seeker orientation of a space vehicle in relation to the planet being orbited. 3,774,207, Cl. 343-7.400.
Yasumatsuya, Noboru, to Matsushita Electric Industrial Co., Ltd. Vertical deflection device. 3,774,068, Cl. 315-27.0td.
Yasumatsuya, Noboru, to Matsushita Electric Industrial Co., Ltd. Vertical deflection device for use in television receivers. 3,774,069, Cl. 315-27.0td.
Yeda Research and Development Co., Ltd.: *See—*
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Yokoyama, Isao: *See—*
Yamauchi, Noriyoshi; Ishino, Ken; and Yokoyama, Isao, 3,773,669.
Yonker, Jerry A.: *See—*
Baumgardner, John D.; Vandenbrink, Wayne; and Yonker, Jerry A., 3,773,406.
Yoshikawa, Yoshio; Kondo, Hiroshi; Sugio, Akitoshi; and Kato, Tomotake, to Mitsubishi Edogawa Kagaku Kabushiki Kaisha. Apparatus for treating a mixture. 3,772,799, Cl. 34-92.000.
Yoshimura, Ippei; Fukue, Norihiko; Sakamoto, Hiroshi; Murofushi, Isashi; Hiyama, Takami; and Matsunaga, Takao, to Ajinomoto Co., Inc. Spiroacetal diamine-epoxide liquid as curing agent for epoxy resins. 3,773,790, Cl. 260-340.700.
Yoshimura, Shohei; Matsui, Takeshi; and Yamaguchi, Takeshi, to Toyo Boseki Kabushiki Kaisha. Paper-like polymeric films and production therefor. 3,773,608, Cl. 161-168.000.
Yoshinari, Yukio: *See—*
Kurimoto, Kozo; Umetsu, Hiroshi; Shoji, Takeo; and Yoshinari, Yukio, 3,774,139.
Young, Alexander Irwin: *See—*
Messervey, William Albert; Wyeth, William Albert; and Young, Alexander Irwin, 3,774,092.
Young, Don L., Jr.: *See—*
Sands, Ronald L.; and Young, Don L., Jr., 3,773,282.
Yu, Lin S.: *See—*
Nesslage, Donald J.; and Yu, Lin S., 3,773,505.
Yuen, Kin Yat Chuen; and Yuen, Sun. Inflatable mattresses and cushions. 3,772,717, Cl. 5-349.000.
Yuen, Sun: *See—*
Yuen, Kin Yat Chuen; and Yuen, Sun, 3,772,717.
Yui, Hiroshi: *See—*
Takahashi, Hiroshi; Yui, Hiroshi; and Inoue, Takayuki, 3,773,708.
Yumoto, Hiroshi: *See—*
Aizu, Keiichiro; Kumada, Akio; Yumoto, Hiroshi; Ashida, Sakichi; and Furuhata, Yoshio, 3,773,898.
Zachry, H. B., Co.: *See—*
Cox, Elmer Adrain; Tiner, Wayne Douglas; and Woods, Ritchey Paul, Jr., 3,772,835.

Zagalsky, Nelson R., to Honeywell Inc. Apparatus and method for achieving optimum performance of an airplane. 3,774,017, Cl. 235-150.200.

Zahuranec, Emery J.; and Barth, Ross E., to Crawford Fitting Company. Apparatus for use in the make-up of tube fitting. 3,773,169, Cl. 206-46.00h.

Zaias, Narbo, to Research Corporation. Fungicidal compositions comprising griseofulvin and thiabendazole and methods of utilizing same. 3,773,959, Cl. 424-270.000.

Zausch, Wolfgang: *See*—
Budszinat, Willy; Erdmann, Otto; and Zausch, Wolfgang, 3,772,848.

Zech, John D.: *See*—
Ford, Ernest C., Jr.; and Zech, John D., 3,773,804.

Zechman, John H., to International Business Machines Corporation. Monolithically fabricated transistor circuit with multilayer conductive patterns. 3,774,079, Cl. 317-101.00a.

Zelenka, Donald J., to General Motors Corporation. Temperature responsive switch. 3,774,136, Cl. 337-382.000.

Zelenka, Donald J., to General Motors Corporation. Temperature responsive switch. 3,774,138, Cl. 337-382.000.

Zell, Keith D.; and Kaufman, August T., to MTS Systems Corporation. Torsional resonant system. 3,772,913, Cl. 73-67.200.

Zeller, Josef K.: *See*—
Burkhardt, Max; Huber, Horst; Zeller, Josef K.; Chateau, Christian; and Schmid, Markus, 3,773,103.

Ziegler, Kurt F., to Outboard Marine Corporation. Exhaust system for three cylinder engine. 3,772,887, Cl. 60-313.000.

Zielinski, James. Thiophosphates of acylated 3-amino-2-oxazolidones. 3,773,782, Cl. 260-307.00c.

Ziemelis, Ojars J.; Coppock, Richard A.; Sonnenberg, Hartmut; and Mengers, Paul E., to GTE Sylvania, Incorporated. Incoherent to coherent image converter. 3,774,124, Cl. 332-7.510.

Zimmermann, Adolf, Maschinenbau: *See*—
Lesk, Adolf; and Link, Ottmar, 3,773,221.

Zinck, Eugen. Motor operated hand hoe. 3,773,112, Cl. 172-42.000.

Zinser-Textilmaschinen Gesellschaft mit beschrankter Haftung: *See*—
Mutschler, Gunther; and Scheutle, Erich, 3,772,869.

Zlotek, Rudolf, to Seeber, Willi. Method of binding the synthetic resinous wall of an opening to a metal insert. 3,772,760, Cl. 29-400.000.

Zoecon Corporation: *See*—
Henrick, Clive A., 3,773,793.

Zovko, Carl T.: *See*—
Boyars, Carl; and Zovko, Carl T., 3,773,947.

Zschocke, Albrecht; Kummer, Horst; Mayrhofer, Eike; Kimmig, Josef; and Kiefer, Hans, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. N-arylsulfonyl-N'-2-tetrahydrodicyclopentadienyl-ureas. 3,773,802, Cl. 260-397.700.

Zuidweg, Marius Hendrik Johan: *See*—
Van Welzen, Henk; and Zuidweg, Marius Hendrik Johan, 3,773,648.

Zurn Industries, Inc.: *See*—
Byrd, Richard W., 3,773,060.

Zverev, Anatoly Ivanovich. Installation for detonation working of materials. 3,773,259, Cl. 239-81.000.

Zwach, Jan: *See*—
Sieckmann, Werner; Jurging, Klaus; and Zwach, Jan, 3,773,629.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF NOVEMBER, 1973

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Buehrle, William B., to Motorola, Inc. Two-state communication devices having combined clock and information signals. Re. 27,810, 11–20–73, Cl. 325—321.

Haffner, Donald G., to Jacobsen Mfg. Co. Hydrostatic transmission control for vehicles. Re. 27,813, 11–20–73. Cl. 74—474.

Hanson, Walter J., to Pitney-Bowes, Inc. Paper jogger. Re. 27,814, 11–20–73, Cl. 271—89.

Honeywell Information Systems Inc.: *See*—
Lipp, James P. Re. 27,812.
Haffner, Donald C. Re. 27,813.

Limantour, Julio. Tapered and grooved bobbin. Re. 27,811, 11–20–73. Cl. 242—118.310.

Lipp, James P., to Honeywell Information Systems Inc. High density storage and retrieval system. Re. 27,812, 11–20–73, Cl. 340—172.500.

Motorola, Inc.: *See*—
Buehrle, William B. Re. 27,810.

Pitney-Bowes, Inc.: *See*—
Hanson, Walter J. Re. 27,814.

LIST OF PLANT PATENTEES

Cornard-Pyle Co., The: *See*—
Hutton, Sidney B. Jr. 3,410.

Frampton's Nurseries, Ltd.: *See*—
Machin, Barrie J. 3,412.

Hutton, Sidney B., Jr., to The Cornard-Pyle Co. Azalea plant. 3,410, 11–20–73, Cl. 55.

Machin, Barrie J., to Frampton's Nurseries, Ltd. Chrysanthemum plant. 3,412, 11–20–73, Cl. 81.

Zaiger, Chris F. Peach tree. 3,411, 11–20–73, Cl. 43.

LIST OF DESIGN PATENTEES

AB Custavsbergs Fabriker: *See*—
Juhlin, Sven-Eric. 229,364.

AMP Inc.: *See*—
Averitt, Marnie C. 229,314.

Akers, Henry, and P. L. Akers. Combined sissy bar pad and receptacle for cycles. 229,369, 11–20–73, Cl. D90—15.

Akers, Patricia L.: *See*—
Akers, Henry, and P. L. 229,369.

Alden, Charles L., to Minnesota Mining and Mfg. Co. Combined splicing tape dispenser and recording tape splicing block. 229,350, 11–20–73, Cl. D61—1.

Allinquant, Fernand M., and J. G. Allinquant. Hand operated meat tenderizer. 229,272, 11–20–73. Cl. D7—101.

Allinquant, Fernand M., and J. G. Allinquant. Hand operated meat tenderizer. 229,274, 11–20–73, Cl. D7—101.

Allinquant, Jacques G.: *See*—
Allinquant, Fernand M., and J. G. 229,272.
Allinquant, Fernand M., and J. G. 229,274.

American Desk Mfg. Co.: *See*—
Kramer, Gideon A. 229,265.

Amerock Corp.: *See*—
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Tegner, Raymond U. H. 229,289.
Tegner, Raymond U. H. 229,290.
Tegner, Raymond U. H. 229,292.
Tegner, Raymond U. H. 229,293.

Angelo, Nicholas C. Reversible golf glove. 229,253, 11–20–73, Cl. D2—361.

Arrow Development Co. Inc.: *See*—
Morgan, Edgar A. 229,354.

Askew, Aubrey, to Dunlop Holdings Ltd. Sports shoe. 229,251, 11–20–73, Cl. D2—309.

Averitt, Marnie C., to AMP Inc. Two-part electrical connector. 229,314, 11–20–73, Cl. D26—1.

Bata Shoe Co., Inc.: *See*—
Edmonds, Thomas A. 229,252.

Benefield, John D., and R. R. Kozinski. Pipe and tube bender. 229,281. 11–20–73, Cl. D8—32.

Bennett, Lester H. Foldable tray and container attachment for an invalid chair. 229,361, 11–20–73, Cl. D83—1.

Benoit, Roland A., and R. H. Duprey, to Interroyal Corp. Bed. 229,260, 11–20–73, Cl. D6—79.

Berger, Irvin E.: *See*—
Ronvik, John P., and Berger. 229,370.

Bombardier Ltd.: *See*—
Scott, Thomas. 229,302.

Brandt, Harvey R., and N. Werner, to Gaven Electronics Division Antennacraft Co. Television antenna. 229,319, 11–20–73, Cl. D26—14.

Bratt, Robert W.: *See*—
Fellers, Walter E., Bratt, Huben, and Heinze. 229,353.

Brown, William H. Jr. Garment rack or the like. 229,267, 11–20–73, Cl. D6—85.

Browne, Henry A. Smoking pipe. 229,362, 11–20–73, Cl. D85—8.

Brunswick Corp. The: *See*—
Reineman, Richard G., and Schaefer. 229,254.

Burkholder, John W. Crankshaft calibrator degree wheel. 229,358, 11–20–73, Cl. D77—1.

Burridge, Robert E., to Litton Business Systems, Inc. Casing for hand manipulable transducer. 229,316, 11–20–73. Cl. D26—14.

Capperloy Corp.: *See*—
Miles, Ray P. 229,330.

Carey, Cecil D., to Humboldt Industries, Inc. Spiking machine. 229,325, 11–20–73, Cl. D35—2.

Carlisle Tire & Rubber, division of Carlisle Corp.: *See*—
Shughart, Mervin. 229,371.

Carney, Henry B. Packaging container. 229,300, 11–20–73, Cl. D9—224.

Chadwick, Donald T. Chair. 229,259, 11–20–73, Cl. D6—78.

Chapin, Richard M., to Dolly Madison Industries. Header for furniture. 229,264, 11–20–73, Cl. D6—192.

Chemex Corp.: *See*—
Westover, Virginia. 229,278.

Chung Mei Manufactory Ltd.: *See*—
Ming-Kong, Chan. 229,277.

Citti, James E., and C. S. Dienst, to Ore-Ida Foods, Inc. French fried potato product. 229,250, 11–20–73, Cl. D1—21.

Clayton, La Verne E. Escutcheon plate for a pull. 229,294, 11–20–73, Cl. D8—179.

Colesco Industries, Inc.: *See*—
Reiner, Norbert L., Huffman, and Diemond. 229,309.

Corbin, John R. Hair barrette. 229,363, 11–20–73, Cl. D86—10.

Covey, Laird F., to The Stanley Works. Chisel handle or the like. 229,282. 11–20–73, Cl. D8—47.

Covey, Laird F.: *See*—
West, Robert F., and Covey. 229,341.

Cutler, Gary L., to Cutler Plastics Corp. Bottle. 229,296, 11–20–73, Cl. D9—39.

Cutler Plastics Corp.: *See*—
Cutler, Garv L. 229,296.

Damon Corp.: *See*—
Munn, David E., and Maddestra. 229,311.

Danner, Paul L.: *See*—
Docherty, Donald B., and Danner. 229,283.

Davis, Benny W., and C. H. Owens, to Owens Chemical Co., Inc. Elastic exerciser. 229,326, 11–20–73, Cl. D34—3.

Davis, Paul, to Sweetheart Plastics, Inc. Lid for a packaging container or the like. 229,299, 11–20–73, Cl. D9—267.

Dazey Products Co.: *See*—
McNair, Samuel L. 229,360.

Defores, Eugene, to Societe le Foyer. Ball-point pen. 229,357, 11–20–73, Cl. D74—17.

Delahoussaye, John E. Portable, collapsible stove. 229,275, 11–20–73, Cl. D7—110.

Diemond, Joseph: *See*—
Reiner, Norbert L., Huffman, and Diemond. 229,309.

Dienst, Carl S.: *See*—
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Docherty, Donald B., and P. L. Danner. Furniture carrier. 229,283, 11–20–73, Cl. D8—71.

Dolly Madison Industries: *See*—
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Drieze, Hieronimus R. Figure toy. 229,322, 11–20–73, Cl. 34—2.

Dunlop Holdings Ltd.: *See*—
Askew, Aubrey. 229,251.

Dunlop Ltd.: *See*—
Nakazaki, Eiji, Yumoto, and Sakamoto. 229,372.

Duprey, Richard H.: *See*—
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Ebdon, Ronald W., to E. S. Perry, Ltd. Pendulum demonstration device. 229,313, 11–20–73, Cl. D25—1.
Edmonds, Thomas A., to Bata Shoe Co., Inc. Shoe soles. 229,252, 11–20–73, Cl. D2—320.
Elan Industries, Inc.: *See*—
Rausch, Thomas A. 229,355.
Etud S. A.: *See*—
Marrie, Paul. 229,368.
Fabrique d'Horlogerie CHS, Tissot & Fils S.A.: *See*—
Favre, Jean-Jacques. 229,331.
Favre, Jean-Jacques, to Fabrique d'Horlogerie CHS, Tissot & Fils S.A. Watch case. 229,331, 11–20–73, Cl. D42—8.
Fellers, Walter E., R. W. Bratt, M. G. Huben, and D. M. Heinze, to Northrop Corp. Aircraft. 229,353, 11–20–73, Cl. D71—1.
Ferrero, P., & C., S.p.A.: *See*—
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45 3,772,978
53EB 3,772,979
89D 3,772,980
96 3,772,981

CLASS 96
1R 3,773,507
48HD 3,773,512
48R 3,773,508
57 3,773,509
60BF 3,773,510
85 3,773,513
86 3,773,514
90R 3,773,515
94R 3,773,516
114 3,773,517

CLASS 99
456 3,772,786
494 3,772,982

CLASS 100
53 3,772,983
215 3,772,984
282 3,772,985
3,772,986
290 3,772,987

CLASS 101
110 3,772,989
111 3,772,988
230 3,772,990
415.1 3,772,991

CLASS 102
70.2G 3,772,992

CLASS 104
1R 3,772,993
140 3,772,994

CLASS 105
197DB 3,772,995
240 3,772,996
406R 3,772,997

CLASS 106
47R 3,773,528
3,773,529
54 3,773,530
57 3,773,531
59 3,773,532
110 3,773,533
178 3,773,534
298 3,773,535
309 3,773,536

CLASS 110
8R 3,772,998
3,772,999
3,773,000
18R 3,773,001

CLASS 113
121.12 3,773,002
256 3,773,003
3,773,020
262 3,773,004

CLASS 113
55 3,773,005

CLASS 114
66.5H 3,773,006
219 3,773,007
3,773,008
221A 3,773,009

CLASS 115
17 3,773,010
28R 3,773,011

CLASS 116
63P 3,773,012

CLASS 117
11 3,773,537
15 3,773,538
33.3 3,773,539
3,773,541
33.5C 3,773,540
37 3,773,543
49 3,773,544
64R 3,773,545
72 3,773,546
93.31 3,773,547
106R 3,773,548
129 3,773,549
132BE 3,773,550
138.8UA 3,773,552
138.8A 3,773,551
201 3,773,553
215 3,773,554
217 3,773,555
232 3,773,556

CLASS 118
63 3,773,013

CLASS 119
3 3,773,014
5 3,773,015
14.08 3,773,016
17 3,773,017
29 3,773,018

CLASS 122
33 3,773,019

CLASS 123
8.41 3,773,021
8.43 3,773,022
119F 3,773,023
148DS 3,773,024

CLASS 124
11R 3,773,025
22 3,773,026

CLASS 126
39J 3,773,027
285B 3,773,028
288 3,773,029
343.5A 3,773,030
400 3,773,031

CLASS 128
1R 3,773,032
2M 3,773,034
2W 3,773,035
2.05C 3,773,036
2.05F 3,773,037
2.06F 3,773,038
2.06R 3,773,033
6 3,773,039

79 3,773,040
83.5 3,773,041
130 3,773,042
142.6 3,773,044
147 3,773,043
202 3,773,045
230 3,773,046
232 3,773,047
283 3,773,048
362 3,773,049
419D 3,773,050
422 3,773,051
465 3,773,052

CLASS 131

9 3,773,053
133A 3,773,054
140P 3,773,055
182 3,773,609

CLASS 132

7 3,773,056
33R 3,773,057

CLASS 134

62 3,773,058
123 3,773,059
179 3,773,060

CLASS 135

1R 3,773,061

CLASS 136

6LF 3,773,557
6LN 3,773,558
86A 3,773,561
86B 3,773,559
86R 3,773,560
107 3,773,562
182 3,773,563
213 3,773,564

CLASS 137

1 3,773,062
217 3,773,063
244 3,773,064
263 3,773,065
309 3,773,066
318 3,773,067
340 3,773,068
341 3,773,069
430 3,773,070
484.8 3,773,071
494 3,773,072
496 3,773,073
596 3,773,074
604 3,773,075
625.11 3,773,078
625.17 3,773,079
625.19 3,773,076
625.28 3,773,077
625.32 3,773,080
625.43 3,773,081
625.48 3,773,082
625.69 3,773,083
627.5 3,773,084
630.15 3,773,085

CLASS 138

92 3,773,086
120 3,773,087
129 3,773,088
132 3,773,089
141 3,773,090

CLASS 141

42 3,773,091
46 3,773,092
388 3,773,093

CLASS 145

61G 3,773,094

CLASS 148

1 3,773,565
1.5 3,773,566
3,773,567
6.2 3,773,568
11.5F 3,773,569
32.5 3,773,570
172 3,773,571

CLASS 149

11 3,773,572
21 3,773,573
22 3,773,574
3,773,575

CLASS 152

349 3,773,095
361R 3,773,096
370 3,773,097

CLASS 156

6 3,773,576
8 3,773,577
17 3,773,578
21 3,773,579
66 3,773,580
71 3,773,581
158 3,773,582
175 3,773,583
191 3,773,584
192 3,773,585
193 3,773,586
201 3,773,587
205 3,773,588
218 3,773,589
244 3,773,590
265 3,773,591
272 3,773,592
294 3,773,593
299 3,773,594
332 3,773,595
443 3,773,596
499 3,773,597
505 3,773,598
515 3,773,599
551 3,773,600
584 3,773,601

CLASS 161

36 3,773,603
37 3,773,604
39 3,773,106
43 3,773,605
82 3,773,606
168 3,773,608
176 3,773,607

CLASS 162

19 3,773,610
25 3,773,611
168 3,773,612
191 3,773,613
357 3,773,614

CLASS 164

79 3,773,098
89 3,773,099
237 3,773,100
251 3,773,101
276 3,773,102
282 3,773,103
323 3,773,104

CLASS 165

9 3,773,105
51 3,773,107

CLASS 166

54.5 3,773,109
85 3,773,108
309 3,773,110

CLASS 167

36.2 3,773,542

CLASS 169

26 3,773,111

CLASS 172

42 3,773,112
642 3,773,113
762 3,773,114
803 3,773,115
804 3,773,116

CLASS 173

4 3,773,117
43 3,773,118

CLASS 174

25G 3,773,965
31.5 3,773,966
42 3,773,967
52S 3,774,232
53 3,773,968
67 3,773,969

CLASS 175

4.55 3,773,120
4.6 3,773,119
95 3,773,121
385 3,773,122

CLASS 176

15 3,773,615
30 3,773,616
36R 3,773,617
60 3,773,618
86M 3,773,619

CLASS 177

155 3,773,123
210 3,773,124
227 3,773,125

CLASS 178

3 3,773,970
5.4R 3,773,971
6 3,773,974
7.3R 3,773,972
7.5D 3,774,233
58R 3,773,973
66R 3,773,975

CLASS 179

1A 3,773,976
1.5S 3,773,977
15AQ 3,773,978
3,773,980
15BA 3,773,981
15FD 3,773,979
18AF 3,773,982
100.2T 3,773,983
111R 3,773,984
164 3,773,985
175.3 3,773,986

CLASS 180

5R 3,773,126
3,773,127
6.48 3,773,128
14B 3,773,129
24.09 3,773,130
34 3,773,131
64R 3,773,132
79.2B 3,773,133
3,773,134
3,773,135
98 3,773,136
103 3,773,137
114 3,773,138
3,773,139

CLASS 181

33G 3,773,141
33K 3,773,140
3,773,142

CLASS 182

214 3,773,143

CLASS 184

6.24 3,773,144

CLASS 187

29R 3,773,145
3,773,146

CLASS 188

33 3,773,147
72.4 3,773,148
3,773,149
73.5 3,773,150
153R 3,773,151
170 3,773,152
218XL 3,773,153

CLASS 190

11 3,773,154

CLASS 191

12.4 3,773,987

CLASS 192

.094 3,773,156
70.25 3,773,155
113B 3,773,157

CLASS 194

32 3,773,158

CLASS 195

28R 3,773,620
3,773,621
51R 3,773,622
60 3,773,623
66A 3,773,624
99 3,773,625
103.5R 3,773,626

CLASS 197

16 3,773,159
36 3,773,160
49 3,773,161
127R 3,773,162

CLASS 198

21 3,773,163
64 3,773,164
112 3,773,165
196 3,773,166
203 3,773,167

CLASS 200

6R 3,773,988
52R 3,773,989
61.54 3,773,990
83P 3,773,991
144B 3,773,993
144R 3,773,992
148B 3,773,994
153SC 3,773,995
159B 3,773,997
3,773,998
159R 3,773,996
167A 3,773,999
172A 3,774,000

CLASS 203

2 3,773,627

CLASS 204

15 3,773,628
38C 3,773,629
55R 3,773,630
58 3,773,631
59QM 3,773,632
67 3,773,633
98 3,773,634
105M 3,773,635
129.25 3,773,636
146 3,773,637
159.19 3,773,638
180R 3,773,640
192 3,773,639
195G 3,773,642
195S 3,773,641
243R 3,773,643
252 3,773,644
299 3,773,645
3,773,646
3,773,647
3,773,648

CLASS 206

.7 3,773,168
46H 3,773,169
3,773,171
46R 3,773,170

CLASS 207

110.5 3,773,173
131 3,773,174

CLASS 208

6 3,773,649
33 3,773,650
47 3,773,651
49 3,773,652
50 3,773,653
57 3,773,654
107 3,773,655
111 3,773,656
124 3,773,657
180 3,773,658

CLASS 209

73 3,773,172
173 3,773,175
459 3,773,176

CLASS 210

7 3,773,659
8 3,773,660
19 3,773,661
50 3,773,662
68 3,773,177
136 3,773,178
194 3,773,179
315 3,773,180
321 3,773,181
3,773,182

CLASS 211

71 3,773,183
123 3,773,184

CLASS 212

129 3,773,185

CLASS 213

1.3 3,773,186
43 3,773,187
134G 3,773,326

CLASS 214

1BB 3,773,189
1P 3,773,188
16B 3,773,190
16.1R 3,773,191
21 3,773,192
31 3,773,193
63 3,773,194
84 3,773,195
146R 3,773,196
302 3,773,197
505 3,773,198
515 3,773,199
620 3,773,200
621 3,773,201
654 3,773,202

CLASS 215

9 3,773,203
3,773,204
42 3,773,205

CLASS 219

10.55 3,774,003
10.65 3,774,001
10.67 3,774,002
61 3,774,004
98 3,774,005
3,774,009
111 3,774,006
121LM 3,774,010
131R 3,774,007
3,774,011
401 3,774,008
499 3,774,012
535 3,774,013

CLASS 220

21 3,773,206
27 3,773,207
43R 3,773,208
54 3,773,209
3,773,210
63R 3,773,211
83 3,773,212
97D 3,773,213
115 3,773,214

CLASS 221

64 3,773,215
68 3,773,216
75 3,773,217

CLASS 222

1 3,773,218
2 3,773,219
48 3,773,220
56 3,773,221
57 3,773,222
67 3,773,223
139 3,773,224
144.5 3,773,225
148 3,773,226
153 3,773,227
168 3,773,228
177 3,773,229
193 3,773,230
198 3,773,231
480 3,773,232
490 3,773,233

CLASS 226

94 3,773,234
112 3,773,235
186 3,773,236

CLASS 227

18 3,773,237
61 3,773,238
130 3,773,239

CLASS 228

4 3,773,240
5 3,773,241
37 3,773,242

CLASS 229

7S 3,773,243
16D 3,773,244
20 3,773,245
39R 3,773,246
44CB 3,773,247
51WB 3,773,248
52A 3,773,249
69 3,773,250
92.8 3,773,251

CLASS 232

1R 3,773,252

CLASS 233

20R 3,773,253

CLASS 234

22 3,773,869
3,773,870
32 3,773,874

CLASS 235

61.11E 3,774,014
3,774,015
144DM 3,773,254
150.2 3,774,017
151.1 3,774,016
181 3,774,019
183 3,774,018

CLASS 238

2 3,773,255

CLASS 239

1 3,773,256
10 3,773,260
17 3,773,257
3,773,258
81 3,773,259
133 3,773,261
243 3,773,266
291 3,773,262
296 3,773,263
304 3,773,264
585 3,773,265

CLASS 240

1.3 3,774,020
2.1 3,774,021
2.25 3,774,022
10.6R 3,774,023
78LD 3,774,024

CLASS 241

28 3,773,267
30 3,773,268
282.1 3,773,269

CLASS 242

7.21 3,773,270
55.19A 3,773,271
3,773,272
71.9 3,773,273
118.31 Re.27,811
131.1 3,773,274
184 3,773,275
192 3,773,276
201 3,773,277

CLASS 244

4 3,773,278
31 3,773,279
56 3,773,280
77A 3,773,281
83R 3,773,282
103S 3,773,283
142 3,773,284

CLASS 246

63A 3,774,025

CLASS 248

15 3,773,285
97 3,773,286
102 3,773,287
226R 3,773,288

CLASS 250

211J 3,773,289
213VT 3,774,038
266 3,774,033
294 3,774,028
298 3,774,026
302 3,774,030
311 3,774,042
315 3,774,029
330 3,774,043
363 3,774,027
366 3,774,032
388 3,774,034
389 3,774,044
430 3,774,035
444 3,774,045
485 3,774,046
503 3,774,031
506 3,774,037
552 3,774,039
560 3,774,040
563DF 3,774,041

CLASS 251

9 3,773,290
315 3,773,291

CLASS 252

13 3,773,663
40.7 3,773,664
50 3,773,665
51.5A 3,773,666
3,773,667
56R 3,773,668
62.58 3,773,669
79.5 3,773,670
89 3,773,671
92 3,773,672
95 3,773,673
99 3,773,674
147 3,773,675
171 3,773,676
172 3,773,677
186 3,773,678
3,773,680
188 3,773,679
301.1R 3,774,036
301.1S 3,773,682
301.4P 3,773,681
305 3,773,683
309 3,773,684
358 3,773,685
415 3,773,686
426 3,773,687
429C 3,773,688
431R 3,773,689
455R 3,773,692
455Z 3,773,690
463 3,773,691
466PT 3,773,693

CLASS 254

30 3,773,292
134 3,773,293
187 3,773,294
189 3,773,296
195 3,773,295

CLASS 259

1 3,773,297
4 3,773,298
3,773,299
3,773,300
3,773,301
22 3,773,302
147 3,773,303
177A 3,773,304

CLASS 260

2A 3,773,694
2.5AJ 3,773,696
2.5AW 3,773,695
18TN 3,773,697
23XA 3,773,698
29.6RB 3,773,699
29.6B 3,773,776
29.6S 3,773,700
30.2 3,773,713
31.2N 3,773,702
33.6EP 3,773,703
33.8R 3,773,704
37EP 3,773,706
37N 3,773,705
3,773,707
41B 3,773,710
41R 3,773,708
41.5A 3,773,709
45.75C 3,773,722
45.85R 3,773,715
45.85S 3,773,723
45.85 3,773,716
45.9R 3,773,717
46.5G 3,773,724
47CP 3,773,725
47ET 3,773,718
49 3,773,720
56 3,773,863
68 3,773,736
77.5TB 3,773,729
77.5C 3,773,730
78A 3,773,737
3,773,739
78R 3,773,738
78.3R 3,773,726
78.5BB 3,773,727
78.5R 3,773,728
79.5NV 3,773,731
82.5 3,773,854
85.1 3,773,732
85.3R 3,773,733

88.2R 3,773,734
3,773,735
93.5A 3,773,740
93.7 3,773,741
94.9B 3,773,742
94.9F 3,773,743
112.5 3,773,744
123.7 3,773,745
140 3,773,746
143 3,773,747
149 3,773,748
152 3,773,749
206 3,773,751
207.1 3,773,750
209R 3,773,752
209.6 3,773,753
210R 3,773,754
211.5R 3,773,755
211.7 3,773,756
239.1 3,773,757
239.57 3,773,758
240C 3,773,764
240G 3,773,759
240J 3,773,762
242 3,773,760
243C 3,773,761
248NS 3,773,765
249.8 3,773,763
250A 3,773,766
254 3,773,767
268TR 3,773,768
287R 3,773,769
290R 3,773,770
293.69 3,773,771
294.8C 3,773,778
294.8D 3,773,773
294.8R 3,773,772
294.9 3,773,774
295.5A 3,773,775
295.5B 3,773,777
303 3,773,779
306.8D 3,773,780
307C 3,773,782
309 3,773,781
3,773,783
319.1 3,773,784
326NR 3,773,701
326N 3,773,787
326.11R 3,773,785
326.45 3,773,786
326.85 3,773,788
340.7 3,773,790
340.9 3,773,789
343.3 3,773,792
343.5 3,773,793
343.6 3,773,791
345.2 3,773,794
345.7 3,773,795
345.9 3,773,796
348R 3,773,797
3,773,798
3,773,799
383 3,773,800
3,773,801
397.45 3,773,803
397.7 3,773,802
403 3,773,804
404 3,773,805
407 3,773,806
429K 3,773,813
429R 3,773,814
435 3,773,815
448AD 3,773,816
448A 3,773,714
448.2B 3,773,817
448.2E 3,773,818
448.2N 3,773,819
463 3,773,820
465.4 3,773,808
465.8R 3,773,809
3,773,810
469 3,773,811
471A 3,773,719
475P 3,773,807
479S 3,773,812
483H 3,773,826
483 3,773,821
484A 3,773,822
484R 3,773,823
3,773,824
485G 3,773,825
508 3,773,827
515 3,773,721
518A 3,773,712
530N 3,773,828
544C 3,773,829
559H 3,773,830
566B 3,773,831
583H 3,773,833
583K 3,773,832
3,773,834
586H 3,773,835
586R 3,773,836
590 3,773,837
607A 3,773,838
609R 3,773,839
614F 3,773,840
3,773,841
635A 3,773,842
666P 3,773,843
669A 3,773,844
674A 3,773,846
676R 3,773,845
681 3,773,847
3,773,849
3,773,851
681.5R 3,773,848
683.15R 3,773,853
683.3 3,773,850
683.9 3,773,852
827 3,773,855
836 3,773,856
859R 3,773,857
873 3,773,858
937 3,773,711
941 3,773,859
3,773,887
943 3,773,860
949 3,773,861
951 3,773,862
966 3,773,864
971 3,773,865
973 3,773,866

CLASS 261

72R 3,773,305
92 3,773,306
97 3,773,307

CLASS 264

.5 3,773,867
1 3,773,868
22 3,773,871
23 3,773,872
37 3,773,873
45 3,773,875
47 3,773,876
48 3,773,877
49 3,773,878
54 3,773,879
56 3,773,880
151 3,773,883
155 3,773,881
171 3,773,882
182 3,773,884
236 3,773,885
245 3,773,886
296 3,773,888

CLASS 266

15 3,773,308

CLASS 267

61S 3,773,309
110 3,773,310
114 3,773,311

CLASS 269

50 3,773,312

CLASS 270

58 3,773,313
63 3,773,314
69 3,773,315
137G 3,773,327

CLASS 271

22 3,773,316
34 3,773,317
57 3,773,321
80 3,773,322
89 Re.27,814
106 3,773,318
151 3,773,319

CLASS 272

57E 3,773,320

CLASS 273

30 3,773,323
100 3,773,330
123R 3,773,324
126A 3,773,325
139 3,773,328
153R 3,773,329

CLASS 274

4F 3,773,334
4J 3,773,335
9R 3,773,331
10R 3,773,332
11R 3,773,333

CLASS 277

9 3,773,336
89 3,773,337
95 3,773,338

CLASS 280

11.2 3,773,339
11.35T 3,773,340
3,773,341
3,773,344
12H 3,773,342
21R 3,773,345
28 3,773,343
124A 3,773,348
124B 3,773,349
124R 3,773,346
3,773,347
150AB 3,773,350
3,773,351
3,773,352
3,773,353
218 3,773,354
291 3,773,355
477 3,773,356
482 3,773,357
513 3,773,358

CLASS 285

286 3,773,359
307 3,773,360

CLASS 289

14 3,773,361

CLASS 290

38R 3,774,047
42 3,774,048

CLASS 292

48 3,773,368
150 3,773,369
169.21 3,773,370
262 3,773,371

CLASS 293

89 3,773,372
99 3,773,373

CLASS 294

19A 3,773,374
54 3,773,375
86A 3,773,376
104 3,773,377

CLASS 296

37R 3,773,378
107 3,773,379
137B 3,773,380

CLASS 297

191 3,773,381
284 3,773,382
320 3,773,383

CLASS 298

23MD 3,773,385

CLASS 299

40 3,773,386
76 3,773,384
86 3,773,387

CLASS 301

5R 3,773,388
37R 3,773,389
3,773,390

CLASS 302

31 3,773,391
52 3,773,392

CLASS 303

6C 3,773,362
3,773,363
21CH 3,773,365
21F 3,773,366
21P 3,773,364
22R 3,773,367

CLASS 305

14 3,773,393
38 3,773,394

CLASS 307

10AT 3,774,049
66 3,774,050
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CLASS 425		114	3,773,449	290	3,773,455	65	3,773,524	222	3,773,525	280	3,773,459
4	3,773,445	130	3,773,450	384	3,773,456	99	3,773,519	356	3,773,961	289	3,773,460
78	3,773,446	147	3,773,451	388	3,773,457	106	3,773,527	465	3,773,905	CLASS 432	
		220	3,773,452			132	3,773,522	479	3,773,962	185	3,773,461
						151	3,773,518	502	3,773,520	222	3,773,462

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D01—	21	229,250	95	229,273		229,292	D26—	A	229,314		15	229,333	D72—	R	229,355
D02—	309	229,251	99	229,271	177	229,293		5	229,315			229,334	D74—	5	229,356
	320	229,252	101	229,272	179	229,294		14B	229,316	D47—	6E	229,336		17B	229,357
	361	229,253		229,274	248	229,295			229,317			229,337	D77—	1A	229,358
D06—	26	229,254	107	229,276	D09— 39	229,296		F	229,319			229,338	D83—	C	229,360
	27	229,255	110	229,275	168	229,297		G	229,318	D48—	27R	229,339		E	229,359
	63	229,256		229,277	184	229,298		H	229,312	D52—	3	229,340		R	229,361
	70	229,257	132	229,278	224	229,300	D30—	13	229,320			229,344	D85—	8A	229,362
	73	229,258	191	229,279	225	229,301		99	229,321			229,345	D86—	10H	229,364
	78	229,259	D08— 30	229,280	267	229,299	D34—	2R	229,322		6A	229,341		J	229,363
	79	229,260	32	229,281	D14— 24	229,302		5GP	229,324		D	229,342	D87—	1R	229,365
	85	229,267	47	229,282	27C	229,303		K	229,323		7R	229,343			229,366
	148	229,261	71	229,283	65	229,304			229,326	D55—	1B	229,346			229,367
	150	229,262	131	229,284	D16— 1R	229,305		15LL	229,327	D56—	4	229,347	D89—	A	229,368
	188	229,263	139	229,285	D22— 18	229,306		B	229,328			229,349	D90—	15	229,369
	192	229,264	140	229,286	25	229,307	D35—	2A	229,325		D	229,348		16	229,370
	196	229,265	154	229,287	27	229,308		3	229,329	D61—	1N	229,352		20R	229,371
	201	229,266	159	229,288	D23— 4	229,309	D41—	1C	229,330		Q	229,350			229,372
	205	229,268		229,289		229,310	D42—	8R	229,331			229,351	D96—	12	229,373
	269	229,269	162	229,290	D25— 1R	229,311	D45—	4A	229,335	D71—	F	229,353	D97—	2	229,374
D07—	45	229,270	166	229,291		229,313			229,332		Q	229,354			

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DESIGN PATENTS

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PLANT PATENTS

6 : 3,411
42 : 3,410

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U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, Secretary